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CALL FOR CONCEPT PAPERS FOR THE TRAINING WORKSHOP ON SOCIAL SCIENCE RESEARCH ON REPRODUCTIVE HEALTH

In collaboration with the Indian Council of Medical Research (ICMR) and the Ford Foundation, the Task Force for Social Science Research on Reproductive Health of the UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction is planning to hold a Training Workshop for Research on Reproductive Health in South Asia. The workshop will focus on critical issues in reproductive health, including factors affecting contraceptive choice and use, gender roles including male contraception and fertility, determinants and consequences of induced abortion, sexual behaviour and reproductive health, social dimensions of maternal health, and breast-feeding and birth spacing.

The workshop has two objectives: firstly, to familiarise social science researchers with major themes in research on reproductive health, appropriate methodologies and designs for social science research in these areas; and secondly, to enable these researchers to develop empirical research projects and proposals in the area of reproductive health in South Asia.

To attend the workshop, the participants must be planning to undertake research on some aspect of reproductive health in South Asia, and must submit to the workshop organisers a preliminary concept paper describing the project. The intention is to bring together 20-30 researchers, whose concept papers receive favourable reviews, for formal lectures on a variety of conceptual and methodological issues as well as for detailed consultation on their project proposals. Since the workshop can only accommodate a limited number of participants, they will be selected competitively on the basis of their concept papers, particularly the relevance of their research objectives.

The organisers invite the submission of concept papers by interested researchers describing research on any of the various social, cultural and behavioural dimensions of reproductive health in South Asia which they would like to undertake.

Applications for the workshop should include the following:

1. a brief concept paper describing (a) basic research objectives, research questions and hypotheses; and (b) the design of the project, including the site, study population and type of data to be collected or used (maximum six typed pages);
2. a curriculum vitae giving details of the professional training, relevant employment experience, publications and current affiliations; and
3. a copy of a recent publication, if possible.

The workshop is to be held in late September 1994 and the applications should be sent by 28 February 1994 to Dr. Badri Saxena, Indian Council of Medical Research (ICMR), P.O. Box 4508, Ansari Nagar, New Delhi 110 029, with a copy to Dr. Lim Teong Wah, WHO Regional Office, Indraprastha Estate, Mahatma Gandhi Road, New Delhi 110 002. Please mark the envelope with: "FOR WHO/ICMR/FORD FOUNDATION RESEARCH WORKSHOP".

The International Conference on Population and Development—Prepcom II Meeting: Intervention by the representative of the Family Planning Association of India

Mrs. Avabai B. Wadia

The Intervention made by Mrs. Wadia at the morning session of ICPD Prepcom II*, discussing the Preamble and Principles of the Paper PC II under Item 5, is reproduced below.

Mr. Chairman,

Thank you for giving me the privilege to speak as a representative of an NGO.

The "principles" in the paper which we are discussing are well set out and can provide important guidelines for shaping family planning programmes.

It is heartening that these principles reiterate the fundamental basis on which the family planning movement itself was started more that 40 years ago.

They are not new in all cases but are expressed in a manner that can apply to all countries.

They uphold that family planning is essential

(1) to improve the status of women, and
(2) to enhance their health and well-being

Many years ago, an India woman doctor expressed it poignantly when she said: "The plight of woman is that she oscillates between gestation and lactation until death winds up the sorry tale."

We want women to have life and not death.

We want women to become individuals in their own right and not just child-bearing machines.

The cultural and societal coercion pressing on women to have children has to give way to a situation where a woman could attain her rightful equal status by controlling her own body and fertility and exercising her rights as a citizen.

It should, therefore, be emphasised that family planning is a potent means in the

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* *Held in New York on 20th May 1993.*

hands of women to achieve equality.

At all times and in all spheres, medicines and medical technologies have their hazards.

Women die due to pregnancy-related causes in huge numbers because of lack of health care and also because of pregnancies which occur too soon and too frequently.

Women can be saved from such deaths through adopting family planning methods and avoiding pregnancy and the dangers of abortion.

In practicing family planning, there is no ideal family planning method as yet.

But it must be noted that contraceptive use rarely causes death (unless there are other factors involved), even where the available methods may have some side effects, whereas unwanted or hazardous pregnancies are causing millions of women to die every year, in developing countries. There are more such deaths in India in one week that in the whole of Europe in one year.

Today's enhanced awareness of reproductive rights and health must inform not only policies but practical programmes to ensure—

- basic health care for men and women at all stages of life;
- special care for safe motherhood and child survival;
- quality care and counselling in all services for health and family planning;
- and above all, knowledge and access to make informed, voluntary choices in family planning.

In discussing available methods for family planning, their advantages and disadvantages must be made clear, but not so as to *instil fear of family planning* as such, *but to make suitable choices.*

It must be stressed that research towards even better methods of family planning must be encouraged and actively pursued. Also, counselling must be an essential element in providing services to meet the needs and choices of women and of men as well.

It is now well recognised that questions of population are not just a matter of demographics but are closely inter-twined with development and the environment: These three are over-arching factors governing human lives and rights, and have to be viewed in a holistic manner. This means that measures to deal with these factors must reinforce each other and not be in contradiction.

New paradigms for development in developing countries, and a restructuring of consumer-oriented countries are equally important, and must be tackled globally, regionally and nationally.

The Cairo Conference must emphasise, among other things, that a population policy is not a demographic blue-print but covers a broad spectrum of inter-related issues.

It must make it quite clear that the problem of rapid population growth can be solved within a reasonable time frame, and *has* been solved by several countries.

Therefore, with the setting of relevant goals, as has been envisaged in Dr. Nafis Sadiq's paper, and along with other measures, we strongly believe that solutions *can* evolve in a way that is ethical, humane, beneficial, preserving individual human rights and responsibilities, and achieving environmental balance with sustainable development.

The Cairo Conference must send out this assurance as a clarion call.

Thank you, Mr. Chairman.

Cultural determinants of infant mortality in India

Dr. M.E. Khan

Until recently, the study of mortality was largely the domain of medical professionals or demographers. Social scientists had generally remained apathetic to the subject mainly because it was presumed that mortality control can be achieved only through proper medical intervention, either in the form of preventive or curative care. The significance of non-medical interventions for a medical purpose such as the reduction of infant mortality then is more or less a newly-acquired wisdom and has stimulated many social scientists to take an interest in the study of mortality, and particularly in the determinants of infant and child mortality.

One of the reasons for the lack of interest in mortality is the absence of a proper conceptual frame work. A review of the literature on fertility clearly reveals that the number of studies increased significantly when Davis and Black[1] identified the set of eleven intermediate variables through which any change in fertility could be influenced. Bongaarts[2] further reduced the list by giving four 'proximate' variables namely, age at marriage, use of contraception, breastfeeding and frequency of abortion which could explain most of the variations in fertility among societies. His proximate variables are now being used extensively for studying fertility differentials all over the world.

In the study of mortality, till 1980, there have not been any reports about the development of a comprehensive conceptual framework which could help in identifying a set of intermediate/ proximate variables through which, and only through which, social, cultural or economic factors can influence mortality[3]. However, since then, a number of attempts have been made in this direction. Mosely and Chen[4] have identified a set of 14 intermediate variables which they believed have a direct influence on the risk of morbidity and mortality. Jain[5] attempted to improve it further and forwarded the following six proximate variables which he argues are crucial individual level variables for determining the level of infant mortality in a population:

1. Prenatal medical care—Immunisation of pregnant mothers and treatment of infections during pregnancy.
2. Prenatal non-medical care—Maternal

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health including nutrition during pregnancy.
3. Medical care at the birth of the child—General hygiene including the use of sterilised instruments to cut the umbilical cord.
4. Postnatal non-medical child care—Infant feeding practices for example breastfeeding for at least six months.
5. Postnatal preventive medical care—Immunisation.
6. Postnatal curative medical child care—incidence and treatment of illness and effectiveness of treatment.

In a recent article, Nag[3] reviewed a number of frameworks[6-8], besides the Mosely and Chen[4] and Jain[5] models, which have been suggested or used for analysing differential infant child mortality, and concluded that the latter two models have a better potential use as a framework. He tried to integrate Jain's and Talwar's models and forwarded a modified version which he believes is more appropriate for studying infant mortality. The nine proximate variables listed by Nag[3] to study infant mortality are given below.

Variables operating at conception
1. Reproductive health of mother at conception (eg. nutritional status and other indices of maternal health).
2. Genetic constitution of infant (eg. reflecting congenital abnormality).

Prenatal variables
3. Prenatal medical care (eg. immunisation of pregnant mother).
4. Prenatal non-medical care (eg. nutrition and workload during pregnancy).

Factors operating at delivery
5. Medical care at delivery (eg. attendance by medical, paramedical, or other personnel).
6. Non-medical care at delivery (eg. hygienic and sanitary conditions).

Postnatal factors
7. Postnatal medical care (eg. immunisation of infant, treatment of illness).
8. Postnatal non-medical care (eg. infant feeding practices).
9. Accidental injury (eg. fire, flood, boat accident).

The availability of these models has generated a new interest in the study of the determinants of infant and child mortality and it is expected that in the near future more and more studies will be undertaken to measure the values of these proximate variables and the extent to which they influence infant and child mortality in a given social setting.

An understanding of these linkages is important but perhaps it will be much more significant and useful, if a simultaneous attempt is made to understand the social dynamics and the processes through which these proximate variables themselves are influenced. For example, it is not only important to establish linkages between prenatal medical care (immunisation of mother, taking iron folic acid tablet etc.) and infant/child mortality but, it is also important (or perhaps more important) to explore in a given setting, why a proportion of the pregnant women seek and avail of prenatal care while the others do not? Similarly, despite the easy and cheap availability of public immunisation facilities, why are only a small proportion of the children fully protected against the six major killer diseases while others are either not immunised at all or drop out after taking one or two doses of the vaccines? Unless we push our enquiry to this level, the significance of infant mortality studies for planning purposes perhaps will remain limited.

The social dynamics and processes through which the suggested proximate variables are influenced can be better understood by undertaking micro-level case studies using anthropological approaches rather than conducting large-scale cross-sectional surveys. Perhaps an integration of both the approaches will yield much better and comprehensive knowledge than either of the two approaches in isolation[9]. While the number of cross-sectional studies on infant and child mortality is increasing, it is highly desirable that micro-level studies should also be initiated simultaneously. A study of some of the cultural factors which could help in understanding the level of differential mortality and processes through which the proximate variables are influenced, are discussed below.

Cultural factors influencing infant and child mortality

Low age at marriage

Among the various social and cultural factors in India, the practice of marrying daughters at an early age contributes significantly both to maternal mortality and infant mortality. As has already been well documented, early marriage leads to early childbearing, causing complications like cephalopelvic disproportion resulting in prolonged or obstructed labour, ruptured or prolapsed uterus, infection, hemorrhage and, in some cases, even death[10]. While early marriage and childbearing is a serious health hazard for women, it also contributes significantly to the high level of infant mortality.

A review of the literature clearly indicates that the health of infants if affected by their mother's age when they are born[11,12]. Infant deaths are less common among women between the ages of 20-34 than among older or younger women (Table 1).

As seen from Table 1, irrespective of the developmental level of the country, the infant mortality rate is about 30-40 per cent higher when the mother's age ranges between 11-19 as compared to 20-24 and above.

Table 1
Infant mortality by maternal age in selected countries 1968–70

Maternal age (Years)	Brazil	El Salvador	California, USA
19 or below	104	120	26
20–24	68	84	16
25–29	53	73	15
30–34	61	81	17
35+	67	94	18
All ages	65	88	18

Source: Puffer, R.R. and Serrano, C.V.: "Birth weight, maternal age and birth order: Three important determinants." In *Infant mortality*, Pan American Health Organisation, PAHO Scientific Publication No. 294, Washington D.C., 1975.

It has also been observed[12-14] that maternal age influences infant mortality primarily by altering the level of neonatal mortality. Post neonatal mortality on the other hand is influenced more by environmental conditions, cultural values and practices and the availability of medical services than by maternal age. Thus, if neonatal mortality which presently accounts for about 64 per cent of the total infant deaths in India, has to be reduced, all efforts must be made to increase female age at marriage and age at first birth. However, as the data shows, despite government efforts to increase the age at marriage through legislation (making 18 years as the minimum marriageable age for girls and 21 for boys), not much success has been achieved.

According to the 1981 Census, the median age at marriage of currently married women was reported to be only 17.4 years i.e. half of the currently married women in the country, were married before their 18th birthday. Time series data also reveal that the pace of increase in age at marriage is quite slow and between 1971-81, the increase in median age at marriage was very modest—only one year i.e. from 16.4 years in 1971 to 17.4 in 1981[15]. Some recent large-scale surveys carried out in various parts of the country, do not provide any evidence that between 1981-89, female age at marriage has registered any substantial gain. As the following table shows, even today, more than half (about 55 per cent) of the girls in Bihar and Uttar Pradesh and about a third (about 36 per cent) in Maharashtra get married before their 17th birthday. This could be one of the reasons for the very slow decline of infant mortality, and particularly of neonatal mortality in the country.

TABLE 2
Age at marriage of girls in selected states, 1988-89

	Less than 14 years	14-16 years	17+ years
Bihar*	16.1	38.0	45.9
U.P.**	15.7	39.1	45.2
Maharashtra*	56.0	30.7	63.7

Source: * Khan, M.E. and Rao, Sandhya: "Do welfare services reach couples below the poverty line?: A case study of family welfare programme in Bihar." In Singh, S.N., M.K. Premi, Bhatia, P.S., Bose, Ashish (eds.), *Population Transition in India Vol. 2,* B.K. Publishing Corporation, Delhi 143-152, 1989.
** Khan, M.E. and Gupta, R.B.: "India Population Project II in Uttar Pradesh." (mimeographed), Operations × × Research Group, Baroda, 1989.

It may not be out of place to mention that the national averages of vital rates or other related statistics are quite misleading as wide variations with respect to these rates prevail in various parts of the country. For example, in 1981, the mean age at marriage for females ranged between 21.8 years for Kerala to 16.1 years in Rajasthan. Similarly in 1987, the infant mortality rate ranged between a mere 26 in Kerala to as high as 126 in Uttar Pradesh. Thus, it is highly desirable that an attempt be made to identify the causes of such variations, the social, economic and cultural factors which resist an increase in the age at marriage and thereby, indirectly contribute to the continued high level of infant mortality in the country.

A recent micro-level study[16] in Uttar Pradesh reveals three basic reasons as to why parents decide to marry off their daughters at an early age[16]. These are: (a) to conform to tradition; (b) to preserve the chastity of daughters, and (c) to reduce their financial liabilities.

a) *To conform to tradition:* People in the two study villages still followed traditional values and married off their daughters before or soon after they had attained puberty[16]. They believed that the father would be committing a grave sin if he did not do so. According to one of the informants,

> "Society will condemn us if our daughters are not married off before 15 years of age. People will say that the father must be earning out of his young daughters"

This feeling derives form ancient Hindu mythology according to which a girl should be married before she attains puberty and not later than after the first menstruation. However, this feeling was found to be more common among Brahmins and Thakurs. The Indian marriage law which forbids the marriage of girls before the age of 18 years gets little support in rural communities;in fact, the majority of the people are not even aware of the law. For example, none of the 40 informants covered in the case study[16] were aware of the existence of any such law. The violation of the marriage law is not only restricted to rural areas but is also prevalent in urban centres. For example, there was a controversy recently when a minister in Rajasthan married off his two minor daughters[17].

b) *To preserve the chastity of the daughters:* The parents are concerned about their daughters' chastity and marry them off early in order to safeguard them from sexual exploitation. Many informants, and more poor informants than rich ones, expressed such fears. However, they were unable to cite any case of sexual exploitation when asked to give concrete examples. It is highly possible that they hide or avoid discussions on this issue.

This fear was also expressed in a study[10] of Andhra Pradesh and Bihar villages where more than 80 per cent of the respondents wished to marry off their daughters before the age of 19. They were against raising the age at marriage as they feared that this would result in sexual exploitation of their daughters and the parents would suffer social humiliation.

These are not isolated cases. There is evidence that even the wives are not spared. Arens and Beurden[19] in their study of Jhagrapur village have described how a rich peasant misused the poverty of a poor peasant. Narrating the incident they write:

> "...one night the rich peasant came to the poor peasant's house and lay down beside the woman. The poor peasant told his wife not be afraid and not to oppose the rich peasant; after all, his debts had to be paid. The woman ran away from her husband the next day... ..it is class exploitation and women's exploitation side by side".

c) *To reduce financial liabilities:* The increasing practice of dowry also contributes to early marriage, as the amount of the dowry increased with the age of the girl. As reported by the informants[16], one may only have to pay Rs. 5000/- for a child marriage but the expenses could shoot up to Rs. 50,000/- at a later date. Similar observations were made by Vohra[20] in Mudikondam village in Tamil Nadu.

Severe poverty is yet another reason for early marriage. More often than not, the daughters are considered a burden and the parents take the first opportunity to get rid of them through marriage, thereby reducing the number of mouths to feed.

Subordinate status of women

The subordinate status of women in society, particularly in rural areas, contributes significantly to supporting high levels of infant mortality by influencing the various proximate variables listed in Nag's[3] conceptual framework. Subordination of women largely stems from a lack of appreciation by the society (male folk?) of their economic contribution in the welfare of the family. Even though a woman works 14 hours a day in the house, she is considered only as 'housewife'. The economic value of her work as unpaid family worker (in farm or family business) or substitute labour for the various household activities (including collection of fuel, fetching of water and caring family animals), largely remains invisible[21-23]. India with its colonial background, not only has perpetuated but to an extent strengthened the monopolistic structure of society which attempts to optimise its profit by exploiting the poorer and weaker sections of the community. In such social settings, women who remain as invisible workers, are not valued and protected in the same way as the males who are considered as 'bread earners'.

The subordination of women is manifested in various ways in their life including the lack of opportunities for education or the acquisition of vocational skills, hard and long working days within the family, a general neglect of their food intake and medical care, and often, a restriction on their free movement outside the home. Control on outside movement particularly for young women in the reproductive ages, prevents them from availing of pre and postnatal care. In such a situation it is not surprising that even today, in various parts of the country, the majority of women are not protected against tetanus, and deliveries are conducted at home, often in unhygienic conditions and by untrained personnel. All these practices are highly conducive to maintaining a high level of infant mortality.

As mentioned above, the subordination of women is also reflected in their long working days over the entire year. A time use study reveals that women generally

TABLE 3
Time use data of five pregnant women in a normal day

Activity	Time spent in hours				
	Kamlesh (3 m)	Susheela (4 m)	Kusum (7 m)	Kamla (8 m)	Phoolmati (8 m)
Working for wage/salary (unskilled)	10.00	–	–	–	5.30
Travelling in time to go at work place	–	–	–	–	2.00
Handicraft	–	–	2.00	–	–
Cooking and serving food	2.15	2.30	2.00	3.00	4.15
Fetching of water	0.45	3.00	2.00	1.30	1.10
Other household work eg. washing clothes, cleaning, dusting, etc.	1.30	2.00	3.00	2.30	2.15
animal husbandry	–	3.00	2.00	3.00	–
Self care/rest/gossiping/taking food etc.	2.00	3.00	3.00	2.00	2.15
Making cow dung cakes	–	0.30	–	–	–
Child care	–	–	1.00	2.30	–
Grinding of grain		3.00	2.30	4.00	–
Sleeping	7.30	7.00	6.00	5.00	6.45
Crop cultivation	–	–	–	–	–
Religious activities	–	–	–	–	–

Note: 1. Figures in brackets indicate the duration of pregnancy.
2. The time is expressed in hours and minutes eg. 5.30 means 5 hours and 30 minutes.

Source : Khan, M.E., Anker, R., Ghosh Dastidar, S.K. and Bairathi, Shashi: "Inequalities between men and women in nutrition and family welfare services—An indepth enquiry in an Indian village," *ILO Working Paper*, No. 158, WEP Geneva, 1987.

Even though the women know that a certain amount of rest during pregnancy is desirable, in reality only a few fortunate women get the required rest. Most continue to do hard work till the labour pains start[24].

Traditionally, pregnant women used to go to their parents' home for delivery and continue to live there for two to three months after the birth of the child. In the parents' home, being generally free from day-to-day chores, they get some rest during the pre and postnatal periods. It is also presumed that the parents take more care of their food and rest. However, with modernisation and the breaking down of traditions, this practise is slowly declining and women often deliver their children in their own homes rather than going to their parents' home[25]. This is particularly true for the second and subsequent births. In such situations, most women do not get any opportunity to rest before delivery and at most, get 30 to 40 days of rest after it, and that too only if some other adult woman is available in the family to look after the daily household work.

Further, reports indicate that most pregnant women (in fact, most irrespective of pregnancy status) in slums and rural areas suffer from acute anaemia; the majority undertake hard and strenuous work with insufficient food intake. A recent survey[26] reports that the average calorie intake of poor, pregnant urban women in Baroda ranged between 67 to 84 per cent of the ICMR's recommended daily allowance for a normal woman. All these taken together influence the normal growth of the foetus and often result in premature births or low birth weight babies—the two most frequent causes of neonatal mortality in India. Studies show that half of the low weight foetuses end in still births[27] and two-thirds of the babies with a birth weight less than 1500 gm do not survive beyond one month[28].

It is said that if pregnant women take 100 tablets of iron and folic acid during pregnancy, particularly in the third trimester, infant deaths due to low birth weight can be reduced. A study[29] undertaken in Ballabhgarh shows that three or more visits to an antenatal clinic, two doses of anti-tetanus vaccine and 100 tablets of iron and folic acid lowered the neonatal mortality rate by almost 25 per cent. However, due to the restriction on the free movement of women outside the home and, at times, the inaccessibility of services, a large proportion of women in rural India do not get these essential antenatal services. The following figures from some recent large-scale surveys corroborate the above observations (Table 4). Similar observations have been reported by various other investigators, and a detailed review has been made by Khan and Bella[26].

The observation that women who move freely outside the home are able to get better MCH care than those who remain confined to their homes is supported by a recent study[26] in a Baroda slum which indicated that 70 per cent of the women working outside the home had received required doses of tetanus toxoid and iron and folic acid as compared to 60 per cent of those who were confined to their homes.

TABLE 4
Antenatal services received by pregnant women (in percentages)

	Andhra Pradesh* (1988)	Uttar Pradesh* (1988)	Bihar+ (1989)	Maharashtra+ (1989)
Antenatal check - up	57	30	79	91
Protection against tetanus	22	30	33	71
Taking iron and folic acid tablets	65	29	36	62

The figures in brackets give year of survey.

Source: * Khan, M.E. and Rao, Sandhya: "Do welfare services reach couples below the poverty line?: A case study of family welfare programme in Bihar." In Singh, S.N., M.K. Premi, Bhatia, P.S., Bose, Ashish (eds.), *Population Transition in India Vol. 2,* B.K. Publishing Corporation, Delhi 143-152, 1989.

+ Khan, M.E. and Gupta, R.B.: "India Population Project II in Uttar Pradesh." (mimeographed), Operations Research Group, Baroda, 1989.

Childbearing practices

Certain age-old practices related to childbearing such as the place of delivery, non-trained birth attendant, the instrument used for cutting the umbilical cord and so on, are important determinants of neonatal and infant mortality. A review of literature shows that the majority of deliveries in rural areas continue to be conducted at home and by untrained birth attendants (dais) or family members. More often than not, the place of delivery is a closed and dark room with the floor plastered with mud mixed with cow dung, and the waste cloth used during delivery is not always clean. Though attempts are being made throguh extension education to encourage the use of sterilised blades for cutting the umbilical cord, the use of the kitchen knife, sickle, sharp bamboo pieces and other instruments are yet not uncommon. All these practices are potential sources of infection and neonatal tetanus.

During the 1970s more than 80 per cent of rural births took place at home by untrained dais or other family members. By 1981-83, the percentage had reduced to about 73[31].

It is expected that the proportion of such deliveries must have further declined since then. However, some of the recent large-scale sample surveys conducted in a few states indicate that the decline is only marginal and the majority of the deliveries particularly in the backward states like Andhra Pradesh, Bihar, Uttar Pradesh etc. are still being conducted by untrained *dais* (Table 5).

Considering the fact that traditional birth attendants will continue to play a vital role during pre and intranatal care, the Government of India has undertaken a "*Dai* training scheme' to train traditional birth attendants in basic hygiene and safe delivery practices. An evaluation of the scheme shows that the trained *dais* are relatively more hygiene conscious and practice aseptic methods[32, 33]. However, this is not always the case — a study[33] conducted in Bihar reports no major difference in the practices of trained and untrained *dais*. It may be noted that at times, certain unhygienic practices are followed because of the insistence of family members. For example, some households insist that the same knife which had been used in the family for generations should be used. Generally, such knives are old and rusty, and can easily be a source of infection.

A recent study[34] in Uttar Pradesh and Andhra Pradesh shows that people either prefer to contact the regular PHC/sub-centre staff (Auxiliary Nurse Midwife/Lady Health Visitor) for birth assistance or seek the help of untrained *dais*. Trained *dais* are often not approached. An enquiry on this revealed that when experienced *dais* who services are in much demand, refuse to undergo training, the ANMs recruit young girls or relatively unpopular *dais* in order to complete their target for *dai* training. These latter trained *dais* generally remain unutilised as the community has more faith in the old and experienced *dais*. This observation has been corroborated by a study in Bihar[33].

TABLE 5
Deliveries conducted by trained personnel and place of delivery

	Andhra Pradesh* (1988)	Uttar Pradesh* (1988)	Bihar+ (1989)	Maharashtra (1989)
Attended by trained personnel	36	30	37	81
Conducted in PHC/Sub-centre/private clinics	29	16	22	27

Source: Same as Table 4.

Breastfeeding and weaning practices

The importance of breast milk for the normal growth of the child, in particular the effect of colostrum is well documented. Similarly, the timing of the introduction of supplementary food and weaning practices have a significant influence on the nutritional status as well as the overall development of the child. Negligence at any of these stages could cause serious health hazards for the child and can be fatal. Generally, the lack of hygiene often causes infection leading to diarrhoea, one of the most common causes of infant death.

A review of the literature on infant feeding and rearing practices in India reveals many cultural practices which support the general practice of delaying the initiation of breastfeeding thereby depriving the infant from getting valuable colostrum.

Breastfeeding is generally initiated at least 24 hours after birth and often after 48 or 72 hours[31], though some tribal women have been reported to breastfeed their infants within 6-12 hours of birth[32]. The colostrum is discarded because of the general belief that it is 'heavy' (difficult to digest) or not good for the child. As the colour of the initial milk is not pure white, it supports their perception that in the first one to two days, mother's milk is not pure and hence could harm the child. Pre-lactation food includes beverages like tea, boiled water, honey/sugar/jaggery or glucose with plain water, cow/buffalo milk diluted with water etc. However, not much information is available on how these foods are administered or whether the water used for diluting milk or making the sugar-water mixture is boiled. Existing evidence[31] indicates that the mode of feeding is often not hygienic as the diluted milk/water sugar mixture is fed to the infant with the help of a piece of cotton or a rag, and fingers are used to feed honey. Because of the general lack of knowledge about cleanliness and hygiene, these pre-lactation practices could easily cause infection and lead to diarrhoea.

Similarly, the introduction of supplementary food is often delayed and when introduced, the infant is not given it in a quantity sufficient to satisfy its nutritional needs. Usually, liquid supplements are introduced after 6-8 months, and this is generally diluted cow/buffalo's milk. Again, not much information is available on the mode of feeding and the water used for dilution. However, in rural Gujarat and Uttar Pradesh, a plastic nipple fixed on a used medicine bottle is used for feeding the child. Being quite narrow at the mouth, the bottles are difficult to wash and are a potential source of infection. It has been also reported and observed that the milk is often so dilute that the child gradually becomes malnourished. The practice of diluting milk is followed because of the belief that cow/buffalo's n [illegible] digest, but often because of poverty. One of the reasons for prolonged, exclusive breastfeeding and late introduction of supplementary foods is the inability of the parents to purchase milk for feeding the child.

In certain areas, breastfeeding is abruptly stopped if the mother becomes pregnant. Such abrupt weaning could cause serious health problems particularly if the chid nas been exclusively breastfed. However, not many studies are available on these aspects and its consequences for child survival and development. Often when abrupt weaning takes place, the inter-pregnancy interval is quite short. This could be harmful not only to the youngest living child but also for the normal growth of the foetus. There is ample evidence that children who are born at the end of a birth interval of less than two years are, on average, twice as likely to die in infancy than are children born after a longer interval. Data from the Khanna study in Punjab shows an infant mortality rate of 206 if the interval between successive births was less than 12 months as compared to 108 when the interval was 48 or more months[35].

Summary and Conclusion

The article reveals the persistence of high infant mortality in India, despite major medical interventions both in rural and urban areas, which is, to a great extent, due to non-medical reasons. The paper identifies a number of socio-cultural factors which contribute to the continued high infant mortality rate. These include rampant poverty causing severe malnutrition to all, and particularly to pregnant women, low age at marriage and the subordinate status of women which pushes them to take the role of unpaid family worker. Even though at home and on the farm they perform strenuous work, often 12 to 14 hours a day, their economic contribution remains invisible. As a result, they are less valued, less cared for and less protected. It also prevents them from availing of the benefits of development particularly education, employment and health facilities. Ignorance about proper child care (including immunisation) and following traditional practices of breastfeeding and weaning further aggravate the situation.

It appears then that infant mortality in India may not decline to the desired level at an early date unless an intersectoral coordinated effort is launched both for ensuring the minimum dietary requirements for all (a problem of poverty elevation) as well as for improving the position of women in society. To achieve the latter, the participation of women in the paid labour force and ensuring at least functional literacy for all is perhaps a pre-condition. The health delivery system also needs to be restructured to make it more responsive to women's health needs in general and their reproductive health in particular. It goes without saying that the health delivery system must be made area specific because in a diverse socio-economic, cultural and demographic set-up like ours, one single model cannot be effectively implemented throughout the entire country.

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No-scalpel vasectomy: Hope for the future*

Dr. H.C. Das and Dr. J. Bhattacharjee

Voluntary sterilisation is the number one contraceptive choice in India, the world's second most populous country, and accounts for 60 per cent of all current use[1]. Male sterilisation or vasectomy as a permanent contraceptive method performed by the conventional technique has been an important method under the national family welfare programme. However, the procedure has not received the desired response due to the social stigma, rumours, false beliefs, fear of pain and complications associated with its acceptance. While the social components were too complex to tackle, there was enough scope to make the surgical procedure simple, less painful, less time-consuming and having the minimum chance of post-operative complications, so that it would be more acceptable to the male population. In 1974, Dr. Li and his associates in China developed such a vasectomy technique[2]. It was originally called "ligation of the vas deferens with clamp method under direct vision" and later became known as "No-scalpel vasectomy" (NSV).

The Technique

The procedure does not require a scalpel incision on the scrotal skin as in the conventional method. After administering a local anesthetic in the median raphe at the junction of the upper and middle third, the vas is fixed through the skin by a specially designed "vas ring clamp—. The skin overlying the vas is then punctured by a specially designed mosquito hemostat[2]. The same hemostat is used to separate the skin, and for picking up the vas for excision and ligation. The same puncture is used for the other vas also.

Though developed in China as far back as in 1974, the technique is gaining acceptance in other countries in recent years. It was offered by the New York Hospital—Cornell Medical Centre in 1985[2], while among Asian countries, Thailand adopted it in 1986[3] and India, as recently as 1992. In the Sichuan province of China alone, where the technique originated, more than eight million no-scalpel vasectomies have been performed[3].

Advantages

A comparative study of the conventional vasectomy technique and the no-scalpel procedure has been reported from Thailand[4],

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and another important follow-up study has been conducted in New York[2]. The studies reveal that no-scalpel vasectomy is superior to the conventional method on various counts as indicated in Table 1.

TABLE 1
Comparison between conventional and no-scalpel vasectomy

Aspects for comparison	Conventional vasectomy	No-scalpel vasectomy
Number of instruments needed[5]	14	3
Pain experienced by acceptor	More	Least
Approximate time needed for the procedure	18 min.	8 min.
Suture	Required	None
Complications		
a. Hematoma	2.0 %	0-0.09 %
b. Infection	3.44 %	0-0.91 %

The Delhi experience

The Male Family Welfare Centre (MFWC) of the Lok Nayak Jai Prakash (LNJP) Hospital in New Delhi has been performing no-scalpel vasectomy since September 1991. The first training camp in India on no-scalpel vasectomy was organised in this hospital in March, 1992 with Dr. Kaza of Maulana Azad Medical College and Dr. Banerjee of the National Institute of Health and Family Welfare, New Delhi as trainers. The two doctors had been trained in the technique at Bangkok in September 1991, along with the first author, and two other doctors from Calcutta and Madras.

Though this new technique was officially launched in India on 23rd March 1992, the MFWC of the LNJP Hospital had performed a total of 193 no-scalpel vasectomies between September 1991 and March 1992. Table 2 gives comparative data on the average number of vasectomies performed by the conventional method between the months of April and August during 1988 to 1991 and the number of no-scalpel vasectomies performed during these same months of 1992 at the LNJP Hospital.

Table 2 shows that after adoption of the no-scalpel vasectomy technique in the MFWC at the LNJP Hospital, the number of male sterilisations performed by the Centre increased more than three times (274/85.25 = 3.21) during the last five months (i.e. April to August) of 1992. It is the personal experience of the first author (who has done more than 500 no-scalpel vasectomies) that, less than fifty per cent of the beneficiaries of no-scalpel vasectomies come back for a check-up after the operation.

TABLE 2
Number of vasectomies performed: conventional vs. no-scalpel

		Number of vasectomies					
Year	Technique	April	May	June	July	August	Total
1988-89	Conventional	40	20	22	22	10	114
1989-90	Conventional	20	11	10	14	17	72
1990-91	Conventional	18	21	12	11	17	79
1991-92	Conventional	17	20	12	16	11	76
Total	Conventional	95	72	56	63	55	341
Average	Conventional	23.75	18.00	14.00	15.75	13.75	85.25
1992-93	No-scalpel	55	62	45	74	38	274

Howev
formed
July 1992, not a single case of post-operative complication was reportedby those who returned for a check-up.

Conclusion

Our experience indicates that the no-scalpel vasectomy technique is not only simple but also less painful, takes less time to perform, has a minimum chance of complication, and is better accepted by the male population. The only condition is that the doctor should be properly trained and must so independently. This technique by virtue of its greater acceptability among the male population due to the reasons mentioned above, has ushered in an era of hope to the administrators. Providing inputs in the form of training and health education under the present infrastructure and involving voluntary organisations to promote this new method, can certainly make a substantial contribution to the population control programme of the country.

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An indepth analysis of women with post-abortal bleeding

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Introduction

Medical termination of pregnancy or MTP is a well utilised procedure today especially in the urban areas of India. As such, therefore, a large number of women would be involved if post-MTP complications were to occur frequently. The immediate complications are usually managed as the patient is still in the hospital at the time. We therefore decided to focus our attention on the delayed complications of MTP which a woman is likely to suffer from after she goes home. Post-abortal bleeding along with pelvic infection and incomplete abortion were observed to be the commonest delayed complications in a multicentric study conducted by the Indian Council of Medical Research[1]. The present study was conducted to identify the possible factors associated with PAB and to suggest measures to prevent them.

Sample and Methodology

One hundred and fifty consecutive women coming for first trimester medical termination of pregnancy by vacuum aspiration at a teaching hospital in New Delhi formed the sample for the study. Details about their socio-demographic features, post-MTP complications, if any, and contraceptive use were noted in a pretested and precoded schedule. The women were followed up for 28 days post-abortion to note any delayed complications. However, only 126 women could be followed up (the remaining being untraceable) and details about their bleeding pattern in the presence or absence of pelvic infection, incomplete abortion and type of contraceptive use were noted.

Bleeding lasting longer than seven days post-abortion, more profuse than the normal period, or starting between 7 to 15 days post-abortion was called PAB or post-abortal bleeding[1].

The statistical technique involved the determination of the regression of bleeding on age, gravida and the gestation period of

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the MTP seekers, and was obtained by using a multiple regression model—
$Y = a + b_1x_1 + b_2x_2 + b_3x_3$, where Y = duration of bleeding after termination; x_1 = age; x_2 = gravida; and x_3 = gestation period of the abortees.

The regression coefficients b_1, b_2 and b_3 determine the role of x_1, x_2, x_3 respectively. The covariance matrix required for this calculation was obtained and was inverted to yield the following values for the regression coefficients:

$b_1 = 3.73$; $b_2 = 0.74$; $b_3 = 0.51$

The regression model was tested by the F-test based on the analysis of variance and the multiple regression was found to be highly significant ($P < .001$). The multiple correlation coefficient between Y and (x_1, x_2, x_3 was found to be 0.57). The partial correlation between Y and x_1, x_2 and x_3 were tested in turn holding two of the variables constant each time.

The observations are based on the 126 women who were available for follow up during the study period of 28 days.

Results

Of the 126 women who participated in the study, four were Muslim and the remaining were Hindu. All of them were married. Eighty eight per cent had come for a MTP within eight weeks of gestation. They were by and large educated (66 per cent) up to high school and above, including 34 per cent who were graduates. Over a third of the women (35 per cent) came from families with a monthly income of Rs. 500-700, followed by a fifth (24 per cent) with a monthly family income of over Rs.1000; only five per cent had a family income below Rs.300. Post-abortal bleeding (PAB) by the above definition (of duration over 7 days) was observed in 73 or 58 per cent of the MTP cases; the mean duration was 12.5 days (SD ± 4.5).

Age, number of conceptions and PAB

A distribution of the women who underwent MTP by occurrence of post-abortal bleeding as also by age and number of conceptions is given in Table 1. Except for three women who were below 19 years of age, the majority (86 or 68 per cent) were between 20-29 years; 29 per cent were over 35 years of age. Further, the highest proportion of MTP seekers (28 per cent) were those who had conceived for the third time followed by those who had conceived for the second or fifth time (24 per cent).

TABLE 1

Distribution of women with post-abortal bleeding by age and number of conceptions

	Yes	No	Total
A. *Age (years)*			
15 - 19	2 (66.6)	1 (33.4)	3 (100.0)
20 - 24	18 (36.7)	31 (63.3)	49 (100.0)
25 - 29	26 (70.2)	11 (29.8)	37 (100.0)
30 - 34	16 (72.7)	6 (27.3)	22 (100.0)
35 +	11 (73.3)	4 (26.7)	15 (100.0)
Total	73 (57.9)	53 (42.1)	126 (100.0)
X2 = 13.80; df = 3; P < 0.005			
B. *No. of conceptions*			
One	2 (50.0)	2 (50.0)	4 (100.0)
Two	11 (36.7)	19 (63.3)	30 (100.0)
Three	21 (60.0)	14 (40.0)	35 (100.0)
Four	17 (68.0)	8 (32.0)	25 (100.0)
Five +	22 (68.7)	10 (31.3)	32 (100.0)
Total	73 (57.9)	53 (42.1)	126 (100.0)
X2 = 7.99; df = 3; P < 0.05			

Table 1 also indicates that the incidence of post-abortal bleeding was the lowest (36.7 per cent) in the age group 20-24 years, and rose sharply to 70 per cent among those over 25 years of age. The association between age and the occurrence of post-abortal bleeding was found to be highly significant X2 = 13.80, P < 0.005. Post-abortal bleeding was also found to increase with the number of conceptions - 37 per cent of the women who had had two conceptions developed post-abortal bleeding as compared to 60-68 per cent who had had two, and rose gradually with an increase in the number of conceptions (Table 1). The association between the the number of conceptions and post-abortal bleeding was observed to be significant (X2 = 7.79, $P < 0.05$).

When related to the period of gestation at the time of MTP, 80 per cent of those with a gestation period between 9-12 weeks developed post-abortal bleeding as compared to 55 per cent with a shorter gestation period. The variables were not significantly associated X2=3.41, $P < 0.05$.

Duration/extent of PAB

When the duration of post-abortal bleeeding was studied, it was observed that almost half (49.3 per cent) of the women with PAB, had bleeding of less than seven days' duration and the remaining (50.7 per cent), for over seven days, with 15 per cent of the latter having bleeding of more than 30 days' duration. Further, among the group with 7-15 days' bleeding, only four had profuse bleeding and the remaining, moderate to scanty; of the total then, 17 per cent had profuse bleeding (Table 2). Pelvic infection was diagnosed in 21 cases with post-abortal bleeding; 13 cases required recurretage.

TABLE 2

Distribution of women with post-abortal bleeding by extent and duration of bleeding

	Duration of bleeding in days			
	7-15	15-30	30 +	Total
Profuse	4 (21.1)	6 (31.6)	9 (47.3)	19 (100.0)
Moderate/ scanty	32 (59.3)	12 (22.2)	10 (18.5)	54 (100.0)
Total	36 (49.3)	18 (24.7)	19 (26.0)	73 (100.0)

The regression curve of bleeding on age, gravida and the period of gestation at the time of MTP was fitted and tested. The multiple regression was found to be highly significant $P < 0.001$, and the multiple correlation coefficient value was + 0.57. The partial correlation value between bleeding and gravida, with age and gestation period held constant was found to be + 0.769. However, the partial correlation values obtained in regard to age and gestation period were insignificant.

Post-abortion contraception and PAB

The acceptance rate of reliable contraceptives following MTP was 52 per cent. Of this, the oral pill accounted for 10 per cent; sterilisation 9.5 per cent, and the IUD 32.5 per cent (Table 3).

TABLE 3

Distributuion of women with post-abortal bleeding by method of post-abortal contraception used

Method used	Post-abortal bleeding		
	Yes	No	Total
IUD	26 (63.4)	15 (36.6)	41 (32.5)
Oral pill	6 (46.2)	7 (53.8)	13 (10.3)
Sterilisation	7 (58.3)	5 (41.7)	12 (9.5)
Others/none	34 (56.7)	26 (43.3)	60 (47.7)
Total	73 (57.9)	53 (42.1)	126 (100.0)

X2 = 1.29; df = 3; P = > 0.05

The incidence of post-abortal bleeding was highest among women who had an IUD insertion (63.4 per cent), followed by 58.3 per cent who had undergone sterilisation. It was lowest (46.2 per cent) in the case of those using the oral pill. However, no significant association was observed between contraception and post-abortal bleeding (X2 = 1.29, $P > 0.05$) nor between bleeding and the use of the IUD (X2=4.5, df=3 $p > 0.05$).

Discussion

Medical termination of pregnancy is becoming known more widely and an increasing number of urban women are utilising MTP services. In the urban sample in our study, the majority of the MTP seekers were married, between 20-30 years of age, and with one to two children, a profile common to that observed in most cities in India[1-3]. Women with five or more previous pregnancies were also commonly observed by us, as also in New Delhi and Patna but rarely in Bombay, Calcutta and Poona[1]. Teenagers formed only 2 per cent of the abortees in our study as compared to 10.2 per cent in Calcutta, 8.8 per cent in Baroda[1], and ranging from 7.2 to 24.2 per cent in Western countries as reported by WHO[4]. The MTP acceptors in our study were predominantly from the higher education group (high school and above), which is a reflection of the urban background of the abortees; this has also reported by the ICMR[1] and others[2,6]. Further, very few belonged to the lower income group, the majority reported a family income of Rs. 1000-1500 per month. Similar observations have been reported by the ICMR[1] and others[5].

Almost two-fifths of the MTP acceptors reported post-abortal bleeding indicating the highest rate for our centre, since women who have a complication are more likely to come for follow up than those who do not.

The mean duration of bleeding was 12.5 days suggesting that on an average nearly everyone developed post-abortal bleeding. Since post-abortal bleeding is supposed to be a complication, the definition of post-abortal bleeding needs some rethinking. Our rate of post-abortal bleeding including infection and incomplete evacuation was much higher than the range of 15-20 per cent in the ICMR study[1] and other studies[6-8].

Women between the age of 20-24 years, who have had at least two deliveries, and have come for a MTP within eight weeks of gestation, were least likely to develop post-abortal bleeding. Post-abortal bleeding was significantly associated with age and parity but not with the period of gestation; the ICMR study[1] however, observed a significant positive relationship between post-abortal bleeding and all the three variables. The multiple regression value for PAB with age, gravida and gestation period was highly significant (P .001) and the multiple correlation coefficient value was 0.57. Hence, the three physical variables together appear to play a definite role in the occurrence of post-abortal bleeding. The partial correlation values were inconclusive and need further study.

The rate of acceptance of contraception following MTP was almost in agreement with that observed by the ICMR[1] though another study[9] has reported higher (50 per cent) IUD use. Our observations that post-abortal bleeding is not associated with post-abortion contraceptive use, that women accepting an IUD after MTP are more likely, and pill users are least likely to experience post-abortal bleeding, have also been reported by others[1,9,10].

To sum up, though MTP appears to be a safe procedure it should not be used as an alternative to effective contraception. Women below the age of 25 years and with one or two conceptions are least likely to develop complications especially post-abortal bleeding if the procedure is performed within eight weeks of pregnancy. The adoption of a reliable contraceptive like the pill or IUD after MTP will see them through to the age when they are ready to accept sterilisation.

Summary

Post-abortal bleeding being a common phenomenon, 150 women who had undergone MTP were followed up to study the patten of bleeding in relation to some important variables namely age, gestation

period, parity and contraceptive use. The majority of the women were between the age of 20-30 years and belonged to the lower middle income group. Age, gestation period and gravida together played a significant role on the pattern of post-abortal bleeding. Women below the age of 25 years with three or fewer previous pregnancies, and who underwent MTP within 6-9 weeks of gestation were least likely to develop the complications of post-abortal bleeding. No significant association was observed between post-abortal bleeding and contraceptive use except that the incidence was slightly higher in the case of women who used the IUD post MTP.

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Lactation, postpartum amenorrhoea and abstinence after delivery in an urban population of Bombay

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Introduction

Breastfeeding and lactational amenorrhoea play a unique role in child health, birth spacing and fertility regulation. The duration of breastfeeding which will determine the period of lactational amenorrhoea and the practice of postpartum abstinence are the main determinants of the return of fertility after delivery[1].

Breastfeeding provides some protection against pregnancy. The period of lactational infertility varies greatly among individual women and is determined by many factors including frequency, duration and intensity of suckling, introduction of supplementary feeds and other likely individual, cultural, psychological or sociological factors such as prohibition of coitus during lactation[2]. Prolonged lactation serves as a natural birth spacer but it should be kept in mind that pregnancy may occur in an individual fully lactating woman as early as ten weeks postpartum[2]. Studies have also shown that 3 to 8 percent of women are likely to become pregnant without ever resuming menstruation[3]. The percentage of women identified as ovulating before first menses ranges from 12 to 78 percent[4].

The Bellagio study reviewed data from 13 centres, both from developing and developed countries, to determine the conditions under which breastfeeding can be used as a safe and effective method of family planning. They came to the conclusion that breastfeeding provides 98 per cent protection from pregnancy during the first six months postpartum (a) if the mother is fully or nearly fully breastfeeding and (b) she remains amenorrhoeic. However, the duration of breastfeeding and that of lactational amenorrhoea seems to be declining in many developing countries throughout the world. For example, studies carried out in Taiwan and Thailand have shown that the average

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length of breastfeeding has dropped by about 5 months in the last decade[5]. The Pakistan Fertility Survey also showed a 7.7 per cent decline in breastfeeding prevalence over a eight-year period from 1975 to 1983[6].

The practice of postpartum abstinence also varies greatly among different communities. Many young women initiate intercourse before they come back for the six-week check up after delivery whereas in certain communities women practise abstinence for extended periods after delivery. Singarimbun and Manning[7] observed that the practice of extended abstinence in a Javanese village was due to the general belief that resumption of sexual intercourse prior to weaning has a deterimental effect on both the quality and quantity of the mother's milk. They reported the median duration of abstinence to be 32 months.

An unwanted pregnancy during breastfeeding is a proven and serious risk to the health of the mother and eventually to the health of both the child she is breastfeeding and to the yet unborn child she is expecting. Avoidance of such pregnancies should have high priority for family planning and maternal and child health personnel.

This study was undertaken to determine the duration of postpartum amenorrhoea and abstinence in the urban population served by the clinics of the Institute for Research in Reproduction in Bombay.

Sample and Methodology

Three hundred and fifty clinically healthy young women who attended our clinics between January 1989 to December 1990 were interviewed to gain information about the following parameters: (a)initiation of supplementary feeds to infants; (b) duration of breastfeeding; (c) period of lactational amenorrhoea; and (d) period of abstinence following delivery in women attending our family welfare clinics.

Data was collected from women using Cu–T since these women could be followed up regularly and since Cu–T would not alter the parameters studied. These women were alsao participating in another study undertaken to examine the effects of breastfeeding on Cu–T event rates like expulsion, perforation and bleeding, the data of which is being analysed separately. The respondents of this study were followed up at 1,3,6,9 and 12 months after Cu–T insertion. As many as 70 per cent of them had delivered within the past six months, had not resumed menses at the time of first interview and were further interviewed at each follow up visit; the recall information thus was of a short time period. The remaining 30 per cent of the respondents had a longer recall period. In both groups, data was collected only from women who could clearly recall the above mentioned parameters.

Results and Discussion

Most of the women were between 20 to 29 years of age and had one or two living children. It is well known that exclusive breastfeeding prevents menstruation for a longer period of time than deos partial breastfeeding. Thus, giving supplementary feeds to the infant influences the return of menstruation[5].

Our study showed that a large percentage of women introduced supplementary feeds to their infants by the third or fourth month after delivery. Almost half of them had started supplementary feeds by the third month postpartum, and by the sixth month, as many as 91.5 percent were giving supplementation (Table 1). Introduction of supplementary feeds into the infant's diet should not be encouraged until 4-6 months of age unless there is inadequate milk yield. Initiating supplementary feeds early, whether it be due to commercial promotion of milk and food formulas, to the working status of the mother, or to inadequate milk yield or other socio–cultural factors, would increase infant morbidity and also reduce the birth interval (early resumption of menstruation and fertility) adversely affecting the health of both the mother and the child.

frequency of suckling which results in the early return of menses. A positive relationship was observed to a greater extent between the introduction of supplementary feeds and the length of postpartum amenorrhoea rather than between the duration of breastfeeding and the length of postpartum amenorrhoea.

TABLE 1
Cumulative percentage of various events by months following delivery

Months	1	1½							8		10	11	12	12
Initiation of supplementary feeds	12.0	12.0	25.1	47.4	68.0	78.6	91.5	94.6	96.3	97.4	98.0	98.3	100.0	-
Discontinuation of breastfeeding	3.4	3.4	7.1	11.4	18.5	22.8	32.8	36.2	41.9	44.8	47.4	48.0	65.4	100.0
Resumption of first menstrual period	-	10.8	22.8	41.7	52.0	61.7	70.8	77.1	82.2	84.8	87.1	89.4	95.7	100.0
Resumption of coitus	4.3	14.3	40.6	67.5	80.6	84.9	94.0	95.1	95.7	96.6	96.6	96.9	98.3	100.0

Table 1 also presents the cumulative percentage of women who discontinued breastfeeding at different time periods following delivery. The findings indicate that 88.6 per cent, 67.2 per cent, 55.2 per cent and 34.6 per cent of women were still breastfeeding their infants at 3,6,9 and 12 months after delivery. The percentage of women who started menstruating at 3,4,5 and 6 months after delivery was 41.7 per cent, 52 per cent, 61.7 per cent and 70.8 per cent (Table 1).

Menstruation signals an end to breastfeeding as a contraceptive method. Once a women starts menstruating, she cannot depend upon lactation as a "natural birth spacer" and would need an effective contraceptive method just as much as if she was not breastfeeding. The mean duration of lactational amenorrhoea observed in our study was 5.3 months. Thus, though breastfeeding was not discontinued early, it is the early introduction of supplementary feeds and the consequent reduction in the

Table 2 presents the mean duration of lactational amenorrhoea in Indian women as observed by various workers over the last three decades[8-11]. The figures clearly indicate a decline in the duration of lactational amenorrhoea.

TABLE 2
Lactational amenorrhoea in Indian women

Study	Mean duration of amenorrhoea (months)
Baxi (1957), Bombay	11.9
Peters (1958), Bombay	10.8
Karkal (1969), Bombay	8.4
Prema (1972), Hyderabad	11.1
Joshi (1990), Bombay	6.0
Shah (1990), Bombay	5.3

The mean duration of abstinence observed in our study was 3.5 months as against

5.7 months observed by Karkal[13] in 1969. Table 1 also shows the cumulative percentage of women who resumed coitus at different time periods after delivery. Thus, there has been a decline in the period of lactational amenorrhoea and the period of abstinence after delivery during the last two to three decades. Since it is known that protection against conception is lower after the first menstruation, it would seem advisable to start contraception before coitus is resumed rather than to wait until the first menstrual period.

During a WHO/NRC meeting, Lesthaeghe[14] discussed the situation in Kenya where a decline in both the duration of breastfeeding and adherence to postpartum abstinence taboos over the past decades had brought about increased fertility since the adoption of other contraceptive techniques had failed to keep pace. In India too, if increases in fertility are to be prevented, any declines in breastfeeding and postpartum abstinence must be offset by a comparable increase in the use of contraceptives. Women should be educated, particularly through postpartum programmes that during the first six months postpartum, if she is fully breastfeeding and amenorrhoeic she is not likely to get pregnant. At the same time, it should be stressed that she needs to start a suitable contraceptive if she has started giving supplementary feeds to her baby and before she resumes coitus so as to avoid the occurrence of an unwanted pregnancy.

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Poverty and use of contraceptive methods

Dr. P. Arokiasamy

Introduction

The search for explanations for the high rate of fertility in India has led many to theorise the link between poverty and fertility. Several micro-studies have affirmed the hypothesis of positive association between poverty and fertility[1-3]. Whereas this positive association has seldom been disputed, contraceptive practice in relation to poverty has rarely been ascertained through a comprehensive micro-empirical test. This paper reports the prevalence of contraceptive practice among women of poor and rich households with the objective of examining the influence of poverty on the use of contraceptive methods, and relating it to socio-demographic variables affecting family planning acceptance.

Data and methods

The analysis is based on survey data of 643 households selected by two-stage stratified random sampling in a group of five villages and a town in South Arcot District of Tamil Nadu. The former constituted the rural sample, while the latter formed the urban sample. The group of five villages was chosen from two panchayat unions in Chidambaram taluk of South Arcot district. Two wards were chosen from Chidambaram Town, the Taluk headquarters of Chidambaram Taluk. About 35 per cent of the households were surveyed from among the total number of households with eligible couples in the study area. Poverty was measured using per capita monthly consumer expenditure profiles of the households collected during the survey.

The households were classified into clear categories of poor and rich using the household profiles of per capita monthly consumer expenditure. A per capita consumer expenditure of Rs. 15 for the rural area and Rs. 20 for the urban area for a period of 30 days at 1960-61 prices was chosen to constitute the poverty line for the study as propounded by Dandekar and Rath[4]. The poverty line was updated for the study period (1987) using appropriate price deflators, that is, Consumer Price Index of Agricultural Labourers for the rural, and Consumer Price Index of Industrial Workers for the urban area following the expert opinion of Ahluwalia[5] and Bardhan[6].

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Results and Discussion

Knowledge of contraceptive methods

The level of knowledge of any contraceptive method in the study population, as has been generally found in recent surveys, was nearly 100 per cent irrespective of economic status or place of residence. The most popularly known methods were conventional tubectomy, laparoscopy, and vasectomy with about 97 per cent of the respondents spontaneously reporting as being aware of these mrthods. Awareness was nearly 100 per cent for the urban rich.

The other methods which the respondents were widely aware of were the condom, IUD and pill, with 76.0 per cent, 63.8 per cent and 63.5 per cent respondents respectively reporting spontaneous awareness, and 16.0 per cent, 22.0 per cent and 25.3 per cent respectively reporting awareness following probing. The respondents were reminded to check their knowledge of methods such as abstinence and withdrawal. Very few respondents were aware of methods such as rhythm, jelly/cream, foam tablets and douche. Interestingly, a few respondents said that they were also aware of certain new contraceptive methods which were not listed in the schedule; important among them were Norplant and certain newly developed IUDs.

It was further observed that 89.3 per cent of the respondents had a favourable attitude towards the use of contraceptive methods. The proportion disapproving contraceptive use was larger among the poor, rural respondents as compared to those who were rich and lived in urban areas. The proportion of respondents disapproving the use of contraceptive methods was 15.5 per cent, 10.1 per cent, 9.0 per cent and 2.2 per cent respectively for the rural poor, rural rich, urban poor and urban rich categories.

TABLE 1

Per cent ever users of contraceptive methods

Method used	Rural		Urban		Total
	Poor	Rich	Poor	Rich	
Any method by one or both spouses	47.7 (74)	33.0(62)	45.2(75)	54.8(74)	44.3(285)
Pill	1.3(2)	2.1(4)	0.7(1)	3.7(5)	1.9(12)
IUD	- (0)	0.5(1)	1.2(2)	5.2(7)	1.6(10)
Tubectomy	24.5(38)	18.6(35)	23.5(39)	23.5(32)	22.4(144)
Laparascopy	14.8(23)	4.8(9)	16.9(28)	0.7(1)	9.5(61)
Foam tablets/Jelly cream	- (0)	- (0)	- (0)	0.7(1)	0.2(1)
Rhythm	- (0)	- (0)	- (0)	1.5(2)	0.3(2)
Condom	1.3(2)	2.1(4)	1.2(2)	10.4(14)	3.4(22)
Withdrawal	- (0)	0.5(1)	- (0)	- (0)	0.2(1)
Vasectomy	4.5(7)	8.0(15)	5.4(9)	12.7(17)	7.5(48)
Abstinence	1.3(2)	5.9(11)	1.2(2)	9.7(13)	4.4(28)
Other	- (0)	- (0)	1.8(3)	9.7(1)	0.6(4)
(N)	155	188	166	134	643
Mean number of children ever born	4.37	2.90	3.92	2.68	3.47

Figures in brackets represent the actual number of ever users of the particular contraceptive method.

Contraceptive use

The level of use of contraceptive methods is one of the proximate variables affecting fertility. Table 1 shows the distribution of respondents by per cent ever users of any contraceptive method, and of different methods of contraception. Overall, 44.3 per cent of the respondents reported that they (either the wife or husband or both) had used a contraceptive prior to the survey. It may be noted that in the same household either the husband or wife or both can be users. The overall percentage of ever users relates to the household unit, and therefore even if both spouses are users, ever use at the household level is represented as one.

The percentage of ever users varied extensively by poverty and place of residence, but with a striking difference nevertheless. Whereas in the urban sample, the percentage of ever users was lower among the poor as compared to the rich as would be normally expected, the trend was reversed in the rural area, where acceptance was higher among the poor than among the rich. The rural acceptance rate was 47.7 per cent and 33.0 per cent among poor and rich couples respectively, while in the urban sample, the corresponding rates were 45.2 per cent and 55.2 per cent, indicating a slightly higher acceptance among the poor as compared to the rich, for the rural-urban combined sample. This is very surprising especially since the finding in regard to the relation between poverty and fertility has been affirmed positive as hypothesised (Table 4).

Table 1 also indicates that the mean number of children ever born to the rural poor was 4.37 as compared to 3.92 to the urban poor. This decreased sharply to 2.92 and 2.68 among the rural and urban rich respondents respectively, showing a striking difference of 1.45 births in the rural area and 1.24 births in the urban area between the poor and rich categories. The question that arises then is: why is the acceptance rate higher among the poor as compared to the rich?

A number of explanations are possible. One obvious reason may be traced to the substantial monetary incentives offered by the official family planning programme to acceptors which is a very good amount for the rural poor. This reason seems more valid in light of the observation that most of the respondents had accepted family planning after getting four or five children. The causal reason could be the intensive sterilisation camps targeted towards the poor in the rural areas by the local official family planning programme. Other studies have also corroborated this view. Among them, the illustration provided by Zachariah[7] in a study of Kerala is worth noting. He observes: "We attribute this higher sterilisation among the lower strata of society to the official family planning programme especially with its economic incentives".

Contraceptive use by method

Table 1 also indicates that the majority of the users, that is nearly four-fifths, had adopted a terminal method of contraception namely conventional tubectomy, laparascopy or vasectomy. The most widely adopted method was conventional tubectomy (22.4 per cent), followed by laparascopy (9.5 per cent) and vasectomy (7.5 per cent), which are considered highly efficient methods of contraception. The other methods such as the condom, pill, IUD and abstinence were used respectively by 3.4 per cent, 1.9 per cent, 1.6 per cent and 4.4 per cent of the respondents. Further, the majority of the users were women.

Poverty and contraceptive use

While tubectomy was popular among all categories from the rural poor to the urban rich, laparoscopy was the next popular method among the poor and vasectomy among the rich. Non-terminal methods like the pill, IUD and condom were popular mainly among the rich urban respondents;

their use was infrequent among the respondents of the other three categories.

Current users

A distribution of the respondents by the proportion of current users, among spouses separately, is presented in Table 2. The results show a significant variation in the pattern of use between the husbands and wives. For example, the proportion of current users among husbands was the highest among the urban rich, while on the other hand, the highest proportion of current users among wives was observed among the rural poor, followed by the urban poor. This suggests that among the rich, men are more likey to use contraceptives than women whereas among the poor, more women than men are likely to do so.

TABLE 2
Current users of contraceptive methods

Use of contraceptive methods	Rural		Urban		Total
	Poor	Rich	Poor	Rich	
A. *Husbands*					
Currently using	12	19	10	69	69
	(7.7)	(10.1)	(6.1)	(20.9)	(10.7)
Currently not using	143	169	156	106	374
	(92.3)	(89.9)	(94.0)	(79.0)	(89.3)
Total	155	188	166	134	64
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
B. *Wives*					
Currently using	64	50	66	41	221
	(41.3)	(26.6)	(39.8)	(30.6)	(34.4)
Currently not using	91	138	100	93	422
	(58.7)	(73.4)	(60.2)	(69.4)	(65.6)
Total	155	188	166	134	643
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Figures in brackets represent percentages.

A distribution of respondents by their opinion about future use of contraception provided another important insight about the prospects for future acceptance. Disregarding those who had been sterilised, infertile or were out of the reproductive age group, 11.0 per cent of the respondents intended to use a contraceptive method in future. These respondents were by and large younger and had yet to achieve their desired number and sex composition of children.

Poverty and contraceptive practice by socio-demographic variables

The differential use of contraception observed among the rich and poor respondents was analysed in relation to selected socio-demographic variables such as the number of children ever born and the age of the mother. The influence of these variables on contraceptive use was examined after cross-sectioning by economic category—rich and poor—and by place of residence—urban and rural; the findings are presented in Table 3.

Table 3 indicates that contraceptive acceptance varied positively with children ever born. This was confirmed by the findings presented in Table 4, which indicate that the

Table 3
Poverty and contraceptive practice by demographic variables

	Percent ever users of contraceptive methods				
	Rural		Urban		Total
	Poor	Rich	Poor	Rich	
A. *Children ever born*					
None	0.0	0.0	0.0	0.0	0.0
1 - 3	37.0	29.0	36.5	59.1	40.1
4 - 5	54.5	66.7	54.5	60.0	58.1
5 +	53.3	30.4	63.4	83.3	53.9
Total (all)	47.7	33.0	45.2	55.2	44.3
B. *Age of wife (years)*					
15 - 19	0.0	0.0	0.0	0.0	0.0
20 - 24	15.8	7.1	14.3	10.0	11.8
25 - 29	59.0	27.7	54.5	63.0	48.6
30 - 34	47.2	58.3	59.3	70.4	57.9
35 - 39	48.3	39.4	58.3	61.3	52.0
40 - 49	58.6	35.1	45.9	47.3	46.1
Total (all)	47.7	33.0	45.2	55.2	44.3

number of children ever born to acceptors far exceeds those born to non-acceptors. These results obviously confirm that contraceptive methods are accepted after attaining the desired family size. Table 3 also shows that acceptance increases with the age of the wife to peak at age 30-34, and declines steadily thereafter. This pattern was uniformly observed for all categories except the rural poor, among whom acceptance was fairly high in all the age groups after age 25. The decline in acceptance especially after 40, may be attributed to the belief among older women that they have become sterile, or because they have completed their family size and have less sexual desire. However, during the interviews, it was generally observed that irrespective of the economic status, younger mothers appeared to be well informed of the need for family planning. This is indeed a promising feature for the success of the family planning programme.

Differentials in the ever use of contraception by the influence of social variables and classified by economic status were also studied (table not shown). The percentage of ever users of contraception was found to be generally higher among forward caste communities; it was lower among backward caste communities, and still lower among the scheduled castes. However, it was observed to fluctuate when examined by economic status due to the apparently close association between caste and poor-rich status. Surprisingly, the social variable "family type" showed up as a good variant of contraceptive acceptance. The proportion ever users of contraceptive methods was larger by nearly 15 per cent in the case of nuclear families as compared to respondents from extended families, and this relationship was observed in the case of all categories except the urban rich among whom acceptance did not vary much by family type.

A close positive association was also

TABLE 4
Children ever born by poverty and contraceptive practise

Contraceptive practice	Mean number of children ever born by age of the mother												Total
	15-24				25-34				35+				
	Rural		urban		Rural		Urban		Rural		Urban		
	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich	
Ever users	2.3*	2.0*	2.0*	2.0*	4.1	3.2	3.6	2.6	5.6	4.5	6.1	3.5	4.1
Never users	1.9	1.2	1.5	0.8	3.9	1.8	2.8	1.6	5.7	4.1	4.8	3.1	3.0
Total	2.0	1.3	1.6	0.9	4.0	2.4	3.3	2.3	5.7	4.3	5.5	3.3	3.5

* Indicates a sub-sample size of less than 5 (for that category).

observed between the educational status of both husbands and wives, persisting through all categories of poor and rich. Nevertheless, the commonly observed minor fluctuations, such as a slightly higher acceptance among the illiterate as compared to those with 1-5 years of schooling, were present. On the other hand, higher rural than urban acceptance among the poor as compared to the rich continued to prevail through the cross-sectional analysis by socio-demographic variables.

Acceptors versus non-acceptors of contraceptive methods

A two group discriminant function analysis was fitted to test and measure the differential characteristics between acceptors and non-acceptors of contraceptive methods, using a set of selected socio-economic and demographic variables as predictors, separately for the rural and urban samples. The significance of the discriminant function was assessed by Mahalanobis' D^2 and Fishers F-test of significance[6]. The best set of discriminating variables was extracted by a stepwise discrimination procedure. As the summary results in Table 5 indicate, children ever born, age at marriage and educational status emerge as common variables affecting the use and non-use of contraceptive methods, in both rural and urban areas.

The other variables were specific to place of residence, that is whereas in the rural area, work status of the wife and duration of breastfeeding were significant discriminators, educational and nutritional status of the wife were significant variables differentiating contraceptive users from non-users in the urban area. The canonical discriminant function coefficients indicated a positive relationship between contraceptive acceptance and children ever born, educational status of husband and wife, duration of breastfeeding, nutritional status of wife, and age at marriage of the wife respectively. Further, the dummy variable, work status of the woman, was a significant predictor in the discriminant analysis only in the rural area. Another notable finding was that the direction of the discriminant function coefficient in respect of age at marriage changed from positive in the rural to negative in the urban area.

A close examination of the findings reveals that not only do none of the economic variables including poverty emerge as significant discriminators between acceptors and non-acceptors of contraceptive methods, but even important variables such as the number of children

TABLE 5
Discriminant function analysis of the differential characteristics of acceptors and non-acceptors

Variables—Step in the equation	Wilk's Lamda	Wilk's Sig.F	Minimum D2	Minimum Sig.F	Discriminant Coefficient
A. *Rural (N - 343)*					
Children ever born	0.9366	0.0000	0.2804	0.0000	0.9089
Work status of woman	0.9203	0.0000	0.3589	0.0000	- 0.5334
Age at marriage	0.9132	0.0000	0.3941	0.0000	0.3268
Education (husband)	0.9072	0.0000	0.4240	0.0000	0.2868
Breastfeeding	0.9025	0.0000	0.4478	0.0000	0.2401
B. *Urban (N - 300)*					
Children ever born	0.9454	0.0000	0.2296	0.0000	0.8614
Education (husband)	0.8933	0.0000	0.4749	0.0000	0.4856
Education (hife)	0.8868	0.0000	0.5318	0.0000	0.4307
Age at marriage	0.8819	0.0000	0.5319	0.0000	- 0.2373
Weight/height2 (wife)	0.8788	0.0000	0.5482	0.0000	0.1730

Variables rejected in the discriminant function analysis by stepwise procedure

Rural : age of the wife, children died, per capita consumer expenditure, per capita income, per capita assets holding, per capita calorie intake and educational status of women.

Urban : Age of the wife, children died, per capita consumer expenditure, per capita income, per capita assets holding, work status of woman and duration of breastfeeding.

Note : Education was measured as the number of years of school attended.

Weight/height^2 is a standardised and efficient measure of nutritional status. Work status of woman is a dummy variable with classification of working and non-working.

who died, fail to appear as significant discriminators. Even the significant socio-demographic discriminators explained a relatively very low Mahalanobis' D^2 of 0.4478 and 0.5482 for the rural and urban areas respectively.

The results of this analysis concur fairly well with the findings of another macro-level study which also found that socio-economic factors do not satisfactorily account for the differential use of contraceptive methods in Tamil Nadu[9], thereby depicting a peculiar phenomenon. This is really a difficult phenomenon to explain by survey data of a specific nature. In all likelihood, the situation affirms the hypothesis of programme effects according to which some couples who would not otherwise accept contraception do so because of the availability of user-oriented contraceptive services. That is, services that are delivered on terms that make them more attractive to users can obviate the need for personal motivation to limit fertility.

Conclusion

The above analysis reveals that the awareness of any contraceptive method in the study population was nearly universal irrespective of economic status. The overall acceptance rate was 44.3 per cent in the study population. Poverty did not significantly deter the overall acceptance of contraceptive methods despite its strong positive relation with fertility. However, the relation between poverty and use of contraceptivezmethods sharply varied from a positive relation in the rural area to a negative relation in the urban area. This differential actually neutralises the effect of poverty on the whole. Nearly four-fifths of the users had adopted terminal methods of contraception and the majority of users were women. An increasing number of men had used contraceptive methods among the rich while an increasing number of women had used contraceptive methods among the poor.

An interesting finding was that the conventional tubectomy prodcedure was popular among all the respondents, laparoscopy was popular among the poor, and vasectomy was popular among the rich. The acceptance rate increased with age and acceptors had higher fertility than non-acceptors. Discriminant function analysis of the differential characteristics of acceptors and non-acceptors revealed the socio-demographic variables to be important predictors of family planning acceptance; poverty and other economic variables did not explain these differentials. This may well be taken as an indication that the official family planning programme has played a greater role in the success of family planning acceptance in Tamil Nadu.

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Maternal health care: Impact of training, supervision and community education

Dr. H.N. Ranganathan and Dr. V.N. Rao

Introduction

The King Edward Memorial Hospital Research Centre in Pune in Maharashtra state, had taken up an action research study titled 'Comprehensive Maternal and Child Health Care (MCH)' with support from the Indian Council of Medical Research. Its aim was to put into practice a package of interventions for improving maternal and child health services in rural areas through the existing health infrastructure so that it could be replicated elsewhere in the country. The essential components of the intervention package were:

1. training and supervision of the health functionaires of the Primary Health Centres (PHC) and Sub-centres in the identification and efficient management of high risk pregnant women and infants;
2. education and motivation of the community in the early identification and management of high risk pregnant women and infants;
3. the establishment of a referral system for special care of high risk pregnant women and infants; and
4. the establishment of a system for data collection for monitoring and evaluating the project.

The results of the study are presented here to demonstrate how such practical and sustained interventions can contribute substantially to the quality of maternal care in the rural areas of India in which the bulk of the population lives.

Methodology

A representative rural population of about 1,00,000 was selected for the study. In the first phase of the study, the activities were initiated in the areas covered by three PHCs—Kavathe, Kendur and Takli Haji with a total population of 60,000 spread over 26 villages of Shirur Tehsil of Pune district, and called Phase I area. The second phase of the study covered the remaining 40,000 population residing in 20 villages under the Khanapur and Khed Shivapur PHCs located in Haveli Tehsil of Pune district, referred to as Phase II area.

The project was spread over a period of five years. It was started in the 1986 with a

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series of preparatory steps. These included:

1. A situation analysis to assess the existing health facilities in the area, that is, the availability of sanctioned health personnel and vacancies; available equipment and shortages; availability of medicines, vaccines and other supplies for MCH services; services provided by private medical practitioners and medical institutions located in the area, etc.
2. A survey of amenities like road transport, water supply, etc.
3. Rapport-building with the district and PHC medical officers. Their help was sought in filling vacant posts and providing essential equipment and regular supplies to the PHCs and Sub-centres. The King Edward Memorial Hospital Research Centre also supplied equipment/supplies whenever necessary to tide over initial problems.
4. Recruitment of research personnel and their orientation.
5. A baseline survey to assess the status of MCH services at the beginning of the study.
6. Printing and supply of reporting forms and registers to the PHCs and Sub-centres.
7. Developing health education material.
8. Identifying high risk pregnant women and planning their management and referral channels.
9. Planning training courses for PHC health functionaries.

The project was carried out in close collaboration with the District Health Officer (DHO). The research personnel of the King Edward Memorial Hospital Research Centre were only expected to work as catalysts—to motivate and enhance the capability of PHC health functionaries through intensive training and guidance.

Training

Training was conducted in two stages. In the first stage, the Medical Officers of the PHC and staff of the District Training Team (DTT) were trained at the Regional Health and Family Welfare Training Centre, Pune and the KEM hospital. The training was of two days' duration, and consisted of classroom lectures, demonstrations and discussions. Following this, PHC and Sub-centre health personnel were trained by the research team and DTT, at the headquarters of the PHCs.

The materials used for training were slides prepared specially on the package of MCH services' training modules prepared by the Government of India, health education guidelines prepared by the Government of Maharashtra, and a model for demonstrating childbirth prepared by the School of Nursing, KEM Hospital, Pune.

In addition, emphasis was laid on on-the-job training of the health functionaries (nursing personnel of PHCs and sub-centres) by the research team during their pre-planned monthly visits to the PHCs and Sub-centres. According to this plan, the research team visited each PHC and Sub-centre once a month on days when there were clinical sessions. During these field visits the research team provided on-the-job guidance on clinical and other technical matters, information gathering and record keeping. This continuous on-the-job training in the real setting, not only helped to improve skills but also drove home the point that good maternal care was an essential part of rural health services.

At the regular monthly meetings of the PHCs, the research team encouraged the Medical Officers to discuss the problems encountered by them and to take corrective measures including measures for improving record keeping and maintaining the diaries kept by field workers which are so essential for monitoring and evaluation activities. Besides, the research team apprised the DHO of its impressions of the field visits so as to enable him to take appropriate follow-up action.

Community education

A team comprising of one research officer (Public Health Specialist) and two Medical Social Workers was formed for community education work. The team visited the villages once a month and concentrated on the following activities during its visits.

1. Contacting and informing formal and non-formal village leaders, members of women's and youth organisations and teachers about the high risk approach in MCH care. Their role and cooperation in promoting this approach was stressed.
2. Group talks were given to women. Women were brought together by prior intimation to the community through local multipurpose workers and community health guides. The main topics covered were physiology of conception, the need for early registration of pregnancy, various risk factors and associated dangers and what timely action should be taken to prevent adverse pregnancy outcomes.

Through these meetings, a few clear messages were sought to be delivered: contacting the auxiliary nurse midwife (ANM) for early antenatal registration; estimation of haemoglobin levels in pregnant women; measuring height and weight; recording blood pressure etc., timely referral to appropriate levels of health care institutions, the need for initiating early breastfeeding, identification of risk factors in the newborn, weighing of babies for growth monitoring, giving timely and total immunisation to infants and children etc.

At the community level, women's organisations were encouraged to discuss topics such as MCH and utilisation of health services at their meetings. Pamphlets and flip charts prepared by the King Edward Memorial Hospital Research Centre and the State Health Education Bureau were used extensively.

Results and Discussion

The data presented in Table 1 indicate substantial improvement in the services provided to pregnant women, especially in the ANC (antenatal) registration, immunisation against tetanus, and referrals. Record keeping had also improved and information on blood samples taken from antenatal cases for a haemoglobin estimation, height and weight, detection of high risk pregnant women, weighing of babies etc.; was found to have been systematically recorded in the MCH registers.

TABLE 1

Achievement as indicated by key maternal care indicators

Indicator	1986 (%)	1990 (%)
Total ANC registration	43	100
Early ANC registration (gestational age 20 wks)	34	43
ANCs whose haemoglobin was No record estimated	40	
ANCs whose height and weight was taken	Not done	50
Tetanus toxoid coverage (full dose)	66	73
High risk cases detected	Not done	42
Delivery by trained personnel	26	32
Newborn weighed within 24 hours of birth	23	46
Referrals	No record	57% of the referred cases used the services

A referral system was established in August 1988 and about 55 per cent of the referred cases were observed to have actually availed of the services at hospitals and health centres (Table 1). However, the referral system had not taken firm root as economic factors and cultural practices were found to come in the way of full utilisation of services. It was also observed that the institution which had referred the case did not get a feedback on the treatment provided at the referral centre institution and its outcome on a regular basis.

Continuity of services

To make sure that the various MCH services would continue to be available and utilised even after the study came to an end, the study focus was shifted in April 1990 from Phase I area to Phase II area, leaving the former area in the care of the district health organisation. It was observed that though the visits of the research team to Phase I area were infrequent and made only for gathering information; improved MCH care services continued. Further, the district training team took over the tasks of training and supervision which were being done earlier done by the research team.

Conclusion

The action research project has demonstrated that by sensitising the health functionaries through training and supervision and educating the community on the need for MCH services, the quality and coverage of services as well as their utilisation can be significantly improved. Activities in which improvement could be achieved quickly were registration of antenatal cases, coverage of pregnant women with essential MCH services, identification of high risk cases and their referral. However, activities which needed further improvement were home visits, fuller utilisation of referral services and weighing of newborn babies delivered at home, especially by untrained persons, for detecting low birth weight babies who are at a greater risk.

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Pattern of coital frequency in rural Bangladesh

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Introduction

Unlike most other mammals, man does not have a fixed breeding season; he is sexually active throughout the year, and intercourse occurs more frequently than is necessary for conception. A live birth is possible only if unprotected sexual intercourse has occurred; intercourse has resulted in pregnancy, and the pregnancy has been brought successfully to term. Although there is scarcity of empirical data, it has been suggested that coital frequency plays a vital role in determining the level of fertility in societies that use virtually no contraception. Davis and Blake[1] considered coital frequency as an "intermediate variable" affecting fertility. It has been established theoretically, by calculations, as well as by empirical observations that a strong inverse relation exists between conception delay and reported coital frequency[2-4].

Coital frequency directly affects the fecundability, the monthly probability of conception in the women. If coital frequency lies below the threshold level in a society, its fecundability may be low. At the extremes of coital patterns, where a couple may have intercourse two or three times a day or only once a month, there will be an effect on the time taken to conceive.

There is a widespread belief that high rates of coitus are an important factor in the high fertility observed in many non-industrial societies. It is a western viewpoint to emphasise "primitive sexuality", to comment about sex as a "national sport", and to speculate on the "contraceptive effects" of introducing electricity. There is a story about the effect of the great electricity blackout of 1965 on births in New York city. The blackout, which lasted ten hours from 5.27 p.m. on 9th November to 4.00 a.m. on the 10th, created headlines in the *New York Times* on 10th August 1966 to the effect that a sharp increase in births had been noted nine months later; one hospital reported 28 births instead of the normal eleven, and others reported similar dramatic increases. A sociologist was quoted as saying, "the lights went out and the people were left to interact with one another instead". More cautious interpreters saw the explanation in terms of an interruption of contraceptive usage (i.e. blackout interrupts contraceptive use) rather than increased sexual activity.

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While commenting about Asia's population problem, Robbins[5] has said, "... when the sun goes down on an Indian village, the people are left to darkness. They have no books, no movies, no television. There is only one thing to do—go to bed. There they find their sole source of recreation and amusement, their brief escape from the hours of hard work of the day. At the roots of Asia's problem of population is copulation".

There is a widespread variation in sexual behaviour among different societies[6], and anthropologists have long been interested in sexual behaviour, and in particular, that of pre-industrial societies. However, very little quantitative information is available. Probably, the first such data was made available by Kinsey et al[7] for American Whites. Nag[4] presented a set of such observations for three rural communities in West Bengal (India), and Gould[8] for a village in Uttar Pradesh (India). In Bangladesh, the only reported study was conducted by Ruzicka and Bhatia[9].

In this paper, an attempt has been made to study the pattern of coital frequency in rural Bangladesh and relate it to selected socio-economic characteristics. An attempt has also been made to compare the findings with those of other studies. The findings may provide guidelines for policy makers.

Sample and Methodology

The sampling frame was made from enlisted currently married women listed in the "Couple Registration" records prepared by the Health and Family Planning Centre, Fatehpur in Chittagong district, under the auspices of the Health and Family Planning Department of the Government of Bangladesh, between May 1988 and June 1989. As per these records, there were 2,598 currently married women in the childbearing ages in the study area.

A simple random sample of 1,050 women was drawn without replacement from this. The unit of the study was the sample woman in the Fatehpur Union. Among the 1050 women, the addresses of 15 could not be traced, 17 were not found at home, and 23 refused to answer. Finally, 995 women were successfully interviewed.

Field interviews of the respondents were carried out by trained, experienced female field workers who were educated women and selected from among the active local female Family Welfare Assistants appointed by the Health and Family Planning Centre in Fatehpur. The field workers were specially trained and instructed to be very careful in filling the questionnaires. As most of the respondents were supposed not to be familiar with demographic concepts, the interviewers were repeatedly reminded to pose the questions in simple, understandable form and in the local language. The interviewers were also instructed to be careful about response biases that could arise from social prestige, fears, rumours, stigmas and superstitions. In some cases, indirect questions to such intimate answers as income and personal effects were preferred to direct queries. The respondents were given more time to talk, explain and speak out their mind freely without any inhibitions.

The validity and reliability of the answers pertaining to sexual behaviour in general, and on coital frequency in particular are always open to doubt. Faulty recall and accounts falsified in attempts to present an impressive image of oneself to the interviewer, either by exaggerating or by understating the true frequency cannot be ruled out. How often such instances occurred and whether they were more or less frequent because the interviewers were local women with whom the respondents had previous contact with regard to health and family planning work, is impossible to say. The results, therefore, have to be interpreted keeping these limitations in mind.

Results

Table 1 presents the average monthly coital frequencies by the respondents and their husband's age and also be marital duration of the respondents.

TABLE 1
Average monthly coital frequency of respondents by age, husband's age and marriage duration

Variable	(N)	Coital frequency	S.D. ±
Age of respondent (in years)			
15 - 19	29	10.76	3.39
20 - 24	149	10.24	3.80
25 - 29	214	8.69	3.69
30 - 34	272	6.89	3.40
35 - 39	181	5.45	2.79
40 - 44	61	4.46	2.84
45 - 49	15	3.67	0.89
Age of husband (in years)			
15 - 19	9	11.55	3.71
20 - 24	84	10.64	4.01
25 - 29	152	8.81	3.85
30 - 34	213	8.56	3.55
35 - 39	185	6.54	3.34
40 - 44	114	6.42	3.14
45 - 49	164	4.75	2.74
Marital duration (in years)			
0 - 4	81	11.21	3.54
5 - 9	176	9.42	3.62
10 - 14	241	7.90	3.71
15 - 19	227	6.48	3.21
20 - 24	129	5.01	2.68
25 - 29	52	4.71	2.94
30 +	15	3.46	1.13
Total	921	7.48	3.87

It can be seen that the monthly coital frequency of the women was, on average, 7.48 which is slightly higher than that (6.5) observed by Ruzicka and Bhatia[9] in Matlab, a rural area of Bangladesh. Sexual activity was also observed to decline gradually with an increase in the age of both wives and husbands. Coital frequencies were highest for women below 25 years of age, and declined sharply for both wives and husbands, thereafter. The monthly coital frequencies declined from an average of 10.32 for women under 25 to 3.67 among those aged 45 years and over. A similar pattern was observed among the husbands with the average monthly coital frequency of 10.73 for husbands under 25 years declining to 4.75 in the 45+ age group. Coital frequencies were more or less stable among husbands in the 25-29 and 30-34 age groups.

Coital frequency was also observed to vary with marital duration. It was highest (11.21 in a month) during the first four years of marriage (Table 2), and started declining rapidly thereafter, reaching a frequency of 3.46 for couples who had been married for 30 years or more.When controlled for age of the respondent, coital frequency was found to vary with the age at first marriage (Table 2). Among women of the same age, those who had had an early marriage reported lower coital frequencies than those who had been married at a later age. Thus, women whose age at marriage was above 17 years reported a higher coital frequency than women who were under 15 at the time of marriage.

Table 2 also shows the average monthly coital frequencies of women along with some of their socio-economic characteristics such as religion, education, land ownership, household income, type of family, and breastfeeding habit, controlling all for age. It may be noted that the cell frequencies are small for some groups e.g. women less than 20 years of age, and hence no conclusions could be drawn; we have therefore refrained from making any comments in these cases.

The findings indicate some differential effect of religion on coital frequency. In each age group, non-Muslims, who are mostly Hindus, reported higher coital frequencies

TABLE 2
Average monthly coital frequency by age and selected characteristics

Characteristic	20 years		20—29 years		30—39 years		40 + years	
	X	S.D	X	S.D	X	S.D	X	S.D
Age at first marriage								
< 15 years	10.40(15)	2.53	8.89(141)	4.12	5.99(210)	3.18	3.91(43)	2.69
15 - 17 years	11.14(14)	4.20	9.18(95)	3.34	5.85(93)	2.71	3.75(12)	1.92
> 17 years	–	–	9.92(127)	3.73	7.05(150)	3.53	5.43(21)	2.46
Religion								
Muslim	10.92(26)	3.31	9.17(296)	3.83	6.13(384)	3.24	4.11(63)	2.58
Non-Muslim	9.33(3)	4.62	10.03(67)	3.64	7.34(69)	3.12	5.23(13)	2.52
Education of respondent								
No schooling	9.45(11)	2.01	9.35(205)	3.99	5.88(295)	3.07	4.03(55)	2.30
1 - 5 years	11.73(15)	4.13	9.21(93)	3.59	6.56(96)	3.07	4.06(15)	2.81
6 + years	10.66(3)	2.30	9.41(65)	3.56	8.00(62)	3.38	7.33(6)	3.80
Education of husband								
No schooling	8.57(7)	1.51	9.21(128)	4.14	5.93(163)	3.11	3.74(31)	2.39
1 - 5 years	13.50(8)	3.66	9.14(88)	3.99	5.96(134)	3.28	4.45(20)	2.11
6 + years	10.28(14)	3.02	9.53(147)	3.38	7.01(156)	3.26	4.88(25)	3.08
Land ownership (in acres)								
None	11.25(16)	3.33	8.96(209)	3.81	5.97(2221)	3.09	4.76(25)	2.57
0.01 - 0.80	9.33(6)	2.06	10.30(106)	3.70	6.73(152)	3.48	3.80(26)	2.28
0.81+	10.86(7)	4.45	8.75(48)	3.75	6.46(80)	3.13	4.36(25)	2.91
Household income (in Taka)								
< 1501	10.86(14)	2.44	9.31(180)	3.74	6.34(208)	3.17	5.33(15)	2.89
1501 - 3000	11.00(8)	5.12	9.65(122)	3.81	6.06(135)	3.15	3.96(32)	1.94
> 3000	10.28(7)	3.14	8.72(61)	3.96	6.58(110)	3.50	4.13(29)	2.98
Family type								
Nuclear	10.92(26)	3.49	9 39(341)	3.81	6.37(428)	3.27	4.51(59)	2.68
Joint	9.33(3)	2.30	8.36(22)	3.47	5.24(25)	2.74	3.58(17)	2.18
Breastfeeding								
Yes	10.33(24)	3.10	9.15(338)	3.69	6.25(437)	3.22	4.30(76)	2.59
No	12.80(5)	4.38	11.68(25)	4.60	8.00(16)	3.57	–	–
Total	10.75(29)	3.39	9.32(363)	3.81	6.31(453)	3.25	4.30(76)	2.59

than their Muslim counterparts (Table 2). This is also consistent with the finding of Ruzicka and Bhatia[9] who have found a higher coital frequency among Hindus than among Muslims in Matlab. However, Nag[4] has observed higher coital frequencies among Muslims than among Hindus in a community of rural West Bengal which has a cultural setting similar to that of Bangladesh. The low coital frequencies among Muslims in rural Bangladesh may be due to a greater observance of voluntary sexual abstinence on certain important religious days and prevailing sexual taboos among them as compared to their Hindu counterparts, in addition to errors of under-reporting.

It is interesting to note that among women who are in their twenties, education did not have any substantial effect on coital frequency (Table 2). However, coital frequency increased with an increase in the educational level of women above 30 years of age. Women having no formal education showed a consistently lower coital frequency at all ages than those with about five years of schooling. A similar pattern was observed in the case of husband's education.

Land ownership status appeared to have a considerable effect on coital frequency among women in their twenties (Table 2). It was higher (10.30 in a month) among the women aged 20-29 who possessed 0.01-0.80 acres of land as compared to women of the same age with no land ownership (8.96 in a month). The same pattern was observed among women in the 30-39 age group.

Family type showed some effect on coital frequency. Coital frequencies were consistently higher among women living in nuclear families than in joint families (Table 2), probably because the latter did not enjoy much privacy. In this study, nuclear families were considered to consist of a married couple and unmarried children.

And finally, breastfeeding was found to have a strong influence on coital frequency (Table 2). Women who were engaged in breastfeeding had lower coital frequencies than those who did not. This may, to some extent, be due to certain beliefs which encourage abstinence for example, that intercourse poisons breast milk and may affect the health of the child.

Discussion

Surveys relating to the frequency of intercourse are fairly rare, as sexual behaviour is a difficult topic to investigate. Hence, it is not unlikely to get striking differences in the findings of various studies on culturally similar societies. Large random fluctuations in measures derived from small samples are one of the causes; others are response errors and deliberate misreporting.

Table 3 presents a comparison of our

TABLE 3
Monthly coital frequency reported by three different studies

Age group (years)		West Bengal[2]			Bangladesh[3]
	American Whites[1]	Hindu	Muslim		
			Sheik	Non-Sheik	
15 - 19	14.8	6.0	6.8	9.2	10.76
20 - 24	12.0	7.6	9.6	10.4	10.24
25 - 29	10.4	7.2	9.6	10.8	8.69
30 - 34	9.2	4.4	7.2	8.4	6.89
35 - 39	8.0	2.8	5.6	6.0	5.45
40 - 44	6.8	0.8	4.0	7.2	4.46
45 +	5.2	1.2	1.6	1.6	3.67

Source:

1. Kinsey, A.C., Pomeroy, W.B., Martin, C.E. and Gebhard, P.H." *Sexual behaviour in the Human female*, Saunders Ltd., Philadelphia, Saunders, 1953.
2. Nag, M.: "Sex, culture and human fertility: India and the United States", *Current Anthropology*, 13:231-39 (1972).
3. Present study (1990).

findings with those of two other studies—one conducted by Nag[4] on data from southeast India (West Bengal), and the other by Kinsey et al.[7] on American Whites.

It is evident from Table 3 that our results do not differ much from the findings reported by Nag[4] in India. However, the coital frequency among American Whites is higher than that observed in the present study in Bangladesh, for all ages. This contradicts the widespread western belief that coital frequency is higher among the poor. It also appears that the comment made by Robbins[5] about Asian populations quoted earlier may not be true.

The low coital frequencies observed among Bangladeshi women as compared to white American women may be due to the following reasons in addition to errors resulting from misreporting or under-reporting:

1. lack of privacy: the children often sleep with their parents in over crowded conditions.
2. abstinence during periods of religious ritual;
3. anxiety among men about loss of strength through loss of semen;
4. traditional values about moderation;
5. female inhibitions about sexuality.

In developed societies, where the contraceptive use rate is very high, coital frequency is likely to be high. But in the traditional society of rural Bangladesh as the one under study, the contraceptive use rate is very low. Besides, in rural areas, most people are engaged in agricultural labour throughout the day and are physically exhausted in the evenings. It is possible that physical exhaustion at the end of the day may encourage chastity among couples.

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Socio-cultural characteristics and health-seeking behaviour of the Hill Korwas

Dr. G.D. Pandey and Dr. R.S. Tiwary

Introduction

There are as many as 46 different tribal groups in Madhya Pradesh. These groups show considerable variations in population size, level of development, acculturation and assimilation. The social and cultural traits, religious beliefs and norms as well as traditional economic pursuits vary from tribe to tribe and from area to area[1].

Of the 46 groups, six have been identified as the most backward or primitive tribes. These tribes are not only extremely poor but their population size is small, they have a very low level of literacy, and they lead a secluded life, and, as such, specific strategies and special efforts wouild be required for their development[2]. The Hill Korwas of Madhya Pradesh are one of the six primitive tribes, and are mainly concentrated in the Surguja and Raigarh districts of the state. Since, the socio-cultural characteristics of a population are associated with the health-seeking behaviour of its individuals, an effort has been made in this paper to study, in depth, the health-seeking behaviour of this primitive tribe along with its socio-cultural features.

Data and Methodology

This article describes a project undertaken by the Regional Medical Research Centre for Tribals, Jabalpur, in 1991, to study the socio-cultural aspects of health care in the Hill Korwa tribe. The study was conducted in two blocks of Surguja district in Madhya Pradesh covering 170 households of the Hill Korwas. The villages were selected keeping in mind the various factors affecting accessibility to health services such as distance of the village from the Primary Health Centre (PHC) and sub-centre, proximity to a motorable road and other villages, facility of hand-pump and so on.

Detailed information was collected by trained female investigators using a structured schedule. This was supplemented by an in-depth study of issues relating to antenatal, neonatal and postnatal services/care obtained by verbatim and personal observation techniques. Due care was taken to assess near-correct figures such as age, time, distance and so on wherever

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needed. A small sample of households was deliberately taken in order to control data quality and the difficulty in reaching the villages. Some of the households were revisited several times in order to obtain complete information, since, the adult Hill Korwas are usually available during the evening hours. An idea of their socio-demographic characteristics can be obtained from

Results

The results are presented in three sections. The first deals with the general environmental and socio-economic condition of the Hill Korwas; the second, examines their health-seeking behaviour; the third and fourth concern the knowledge, attitudes and prevailing practices related to antenatal. intranatal and postnatal care, and family planning respectively.

Socio-economic and environmental characteristics

In all, information was collected from 17 villages for the study. Among them, one village was less than 10 kms. from the PHC, 12 were between 10-19 kms., three were at a distance of 20-49 kms., and one was more than 50 kms. from the PHC. Thus, 13 (70 per cent) of the study villages were within a 20-km radius of the PHC and one was more than 59 kms. from it (Table 1). Further, about half of the villages were approachable by jeep.

All the houses were of temporary construction or kachha, and 94 per cent had two rooms including a kitchen. About 50 per cent of the households obtained their drinking water from ponds. Hand-pumps were available in only two of the 17 villages while only eight per cent of the households had electricity. Over 90 per cent of the households owned less than five acres of land, the average landholding being only 2.5 acres. The major source of income was agriculture and forest produce (Table 1).

TABLE 1
Some socio-economic and environmental characteristics of Hill Korwa villages/households

Characteristics	Number
Distance of villages studied from PHC (kms.)	
0 - 9	1
10 - 19	12
20 - 49	3
50 +	1
Approachability	
Approachable by vehicle	9
By foot	8
Type of house	
Kachha	170 (100.0)
Pucca	0
Mixed	0
Type of household	
Nuclear	106 (62.4)
Joint	64 (37.6)
Land (in acres)	
Landless	23 (13.5)
5	135 (79.4)
+5	12 (7.1)
*Source of income**	
Agriculture	165 (97.0)
Forest	155 (91.1)
Labour	162 (95.2)
Number of rooms (including kitchen)	
One	63 (37.1)
Two	97 (57.1)
Three or more	10 (5.8)
Availability of drainage	
Open	170 (100.0)
Closed	0
Toilet facility	
Inside house	
Outside house	170 (100.0)
Type of Chulha	
Hearth smoke	170 (100.0)
Fuel used	
Wood	170 (100.0)
*Source of drinking water**	
Pond	88 (51.7)
Well (uncovered)	67 (39.4)
Handpump	15 (8.8)
Others	12 (7.0)
Houses electrified	
Yes	13 (7.6)
No	157 (92.4)

The figures in brackets represent percentages.
* Multiple response

In 99 per cent of the households, females—usually the wife, fetched water by walking, on average, 1.4 kms. per day for about 1.2 hours. Wood for fuel was fetched by both the husband and wife by spending about 5.2 hours and walking, on average, 3.5 kms. per day. They start early in the morning to collect wood, return in the afternoon, then the wife fetches water and cooks the meal on an earthen chulha (stove). The elders in the family look after the children while the parents are at work.

The level of literacy is dismally low, about three per cent, and female literacy is a mere 1.6 per cent[4]. That the Hill Korwas do not understand or believe that education can help improve their lives is clear from an interesting observation made by this study: In one of the villages, there is a school with a hostel facility, and where the Government provides free lodging, ration and a monthly stipend of Rs. 40/- for each student of the Hill Korwa tribe, and yet, only one Hill Korwa child from this village has been enrolled.

Health-seeking behaviour

While multiple responses were received about their health-seeking behaviour, the Hill Korwas by and large (70 per cent) relied on the *Gunia,* the tribal doctor (70 per cent), followed by the nurse at the Sub-centre (40 per cent), and the PHC (20.8 per cent). About three-fourths of the respondents were aware of the free treatment available at the PHC, but stated that the doctor did not provide services free of cost; he charged a fee for diagnosis and medicines. Under these circumstances, the tribals prefer the local *Gunia* because he did not have to be paid immediately and in cash, but could be remunerated in kind. However, there are other factors in favour of the *Gunia*—he is a part of the socio-religious life of the tribals and the fee charged by him is about a third of that charged by the PHC doctor! The case of Sughani Bai aged 30, resident of a village which is at a distance of 15 kms. from the PHC substantiates this observation. She says:

> "First, we try the treatment of the local magic man. If not cured by him, we take the sick person to the nearest health worker, that is the Volunteer Health Guide or the Auxiliary Nurse Midwife (ANM). In case, the treatment given by the health worker is ineffective, we take the sick person to the government dispensary, but only if we have enough money, because we have to pay fees to the doctor at the PHC. When we do not have any money, we leave the sick person to the mercy of God".

Since the tribal people are extremely poor, in case of an illness, they first try home remedies and watch for a few days (about nine days, on average) before going to the *Gunia.* Thereafter, if there is no improvement for about another three days and if they can afford it, they visit the PHC.

TABLE 2

Some observations of health-seeking behaviour of the Hill Korwas

Characteristics	
*Place of treatment**	
PHC	44 (25.8)
Sub-centre	68 (40.0)
Guniya	119 (70.0)
Others	50 (29.4)
Availability of free medicine at PHC	
Yes	126 (74.1)
No	44 (25.9)
Utilisation of PHC services	
Yes	47 (37.3)
No	79 (62.7)
Reason for utilisation	
Fever	19 (73.2)
Paralysis	2 (7.7)
Diarrhoea	1 (3.8)
Scabies	3 (11.5)
Fracture	1 (3.8)
Mean remuneration (Rs.)	
Doctor	Rs. 114.00
Guniya	Rs. 35.50
Average duration prior to visiting	
PHC	12.2 days
Gunia	9.1 days
Cases treated (and deceased in last one month)	
PHC	15.3
Gunia	25.6
Untreated	56.4

The figures in brackets represent percentages.

* Multiple response

Table 2 indicates that over two-fifths (63 per cent) of the respondents had not utilised the services of the PHC. Among those who had visited the PHC, the majority (73 per cent) had done so for treatment of fever, while the next common ailment was eczema and scabies (11.5 per cent). Retrospective data over a period of one month on the type of treatment availed shows that about 56 per cent of those who had died, had not been given any treatment, while the *Gunia* had treated 25.6 per cent.

Antenatal and postnatal care

The mean age at menarche among the Hill Korwas was about 13.6 years, and the mean age at marriage, about 14.9 years[4]. The first delivery took place, on average, at the age of 18. Of a total of 145 eligible females who were interviewed, none reported an abortion despite probing. Of the 14 women who were pregnant at the time of interview, only one had consulted the ANM during her pregnancy. The common reasons for not visiting the PHC were stated as—not felt necessary, the foetus may get harmed, and economic problems.

When the menstrual period is delayed by a month, the woman is assumed to be pregnant. She does not receive any special antenatal care or diet. Only liquor and bones are prohibited. There is no restriction on her daily work too, including fetching of water and cutting wood.

Out of 14 pregnant women studied, only five seemed to know about tetanus toxoid injections and the intake of iron tablets during pregnancy. A few case studies are presented below to give an idea of the knowledge and attitudes of the Hill Korwas to immunisation (and family planning) of the pregnant woman or other antenatal services.

Case 1: Smt. Kusmi Bai, a mother-in-law, aged 46 years whose daughter-in-law is currently five months pregnant, has this to say about antenatal care:

> "I have delivered so many children. Neither have I needed any medicine nor injections, for myself or for my children. My daughter-in-law has conceived for the second time, she has no problems whatsoever. Even if she has any, I will not go to the government dispensary, because they charge fees and we have no money for two square meals. Tell me, from where, I will pay? It depends on God, since it is by His grace that we get children. It is His desire—to save or let them die."

Case 2: Ruchiya Bai, aged 30 years and pregnant for about five months says:

> "I have delivered five children, of whom two have died. I did not experience any problems during my earlier deliveries. Though, I know that some injections and tablets are given during pregnancy by the nurse, I did not think it necessary to visit the government dispensary for any problem."

Case 3: Ginji Bai, aged 28 years, also pregnant for five months says:

> "This is my fifth pregnancy. I had not had any problem during my earlier pregnancies. Now, I feel weak, my body aches, and I have a problem in moving about. However, in spite of having so many problems, I am unable to get treatment from the PHC doctors because, I have no money even for my meals. I believe, God will look after all my problems".

Case 4: The ANM serving the village reports:

> "It is very difficult to convince these people. They do not easily agree to get immunised. Pregnant women do not take iron tablets due to the fear that it will harm the foetus. And if a pregnant woman were to take the tablets after much persuasion, she usually throws them away after my departure."

As in the case of antenatal care, the Hill Korwas have no knowledge about postnatal care. When the infant is six months old, it is given rice, dal, etc. The mother continues to breastfeed her child for as long as two to four years. Of the 641 children observed in the study, only 2.5 per cent has received BCG, 2.0 per cent had received DPT and polio vaccines, and 1.0 per cent had been vaccinated against measles.

Intranatal practices

Most of the deliveries are conducted by untrained dais or traditional birth attendants (72 per cent), followed by elderly ladies (23.9 per cent) (less than one per cent were conducted by trained dais and the ANM). The delivery is usually conducted in a squatting position believed to be less painful and quicker.

The cord is cut with a bamboo piece in the case of a male child and with a knife or blade in the case of a girl child (this is because the boy will grow up to hunt and gather food with the help of a bow and arrow made of bamboo). A thread is used for tying and mustard oil is applied to the affected area. The mother and the child are given a warm water bath. The mother is then fomented with haldi (turmeric) powder and given some haldi powder mixed in water to drink, and kulthi dal (a local lentil) and rice to eat. The colostrum is not discarded; the child is breastfed about an hour after birth. If the mother does not have sufficient milk to nurse the infant, it is given goat's milk.

Family

family size as reported by the was four, including two male children. One of the couples who had accepted sterilisation (husband and wife both) said:

> "Persons from the Block Office came and told me that the Government is distributing money for the poor. I told my wife that we are poor and there is no harm in taking help. The person asked me to take my wife also. She will also be paid. Then at the hospital, we realised that we will have to be operated, otherwise we will not be paid the money. Thus, we both got operated for the sake of incentive money."

Conclusions and suggestions

The Hill Korwa tribe continues to live in a primitive state; they have a high rate of illiteracy and poverty. They are superstitious and lack faith in modern medicine. They do not utilise the facilities available at the PHC or Sub-centre due to economic constraints and lack of faith. Poverty and ignorance thus are the main causes of the under-utilisation of PHC services. There is an urgent need to educate these people and to undertake intervention programmes to increase their faith in and acceptance of available health services.

Fertility and its determinants : Mizoram

Mr. R.G. Mitra

On 1st March 1991, at sunrise, the population of Mizoram stood at 686,217 thereby recording a 38.98 percent increase over the the population recorded exactly ten years ago. The pattern of population growth in Mizoram since the beginning of the century has been presented in Table 1.

TABLE 1
Population and decadal growth rate, Mizoram, 1901-91

Year	Population	Rate of growth
82,434	1901	
1911	91,204	+ 10.64
1921	98,406	+ 7.90
1931	124,404	+ 26.42
1941	152,786	+ 22.81
1951	196,202	+ 28.42
1961	266,063	+ 35.61
1971	332,390	+ 24.93
1981	493,757	+ 48.55
1991	689,756	+ 39.69

Table 1 shows that during 1911-21, the growth rate of Mizoram fell from the 1901-11 level; this was mainly due to an influenza epidemic and famine. It recorded another fall during 1961-71 and jumped by a phenomenal level of 48.55 per cent during the following decade, 1971-81. Though arguments have been put forward to explain this fluctuation in growth rate, one is more inclined to believe that there has been a gross under-enumeration in the 1971 Census due to the political turmoil in the State, leading to a very high rate of growth during 1971-81 which does not appear to be real as it is based on an unreal and under-estimated population.

Between 1961 and 1991, the population of Mizoram increased by more than two and half times. This rapid increase which has occurred over the three decades is likely to continue well into the next century. This has far reaching implications for almost all aspects of social and economic development in Mizoram—the Government has to keep in mind the need to provide education, health and employment to the people in the State, and to constantly endeavour to better their quality of life. The limited resource generating capacity of the State, which cannot be perhaps, stretched after a certain point of time, coupled with the rapid increase in population will make it difficult for

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the State to meet even the basic needs of a large segment of its population. The Government's development policy and plans for future, therefore, cannot divorce themself from the need for a clear cut population policy.

The Government, therefore, has to urgently realise that the problem of employment and human resource development cannot be tackled if demographic changes are not considered as a part and parcel of the development process. The population problem then should be among the most vital development issues. The State should encourage more research in the area of population, the findings of which should be used in development planning and policy making.

It is known that fertility is the most vital element which affects population change, particularly in developing countries, "although mortality and migration also contribute to the size, structure and growth of population. Fertility is also important because it is inextricably bound to many aspects of the economic and social mileau"[1].

The regulation of fertility through intervention, be it government, social or religious requires a knowledge of past and present levels of fertility. Because, unless data relating to fertility and child survival rates are available it will not be possible to make projections of the population to be housed, educated, given employment, and even more important, fed and clothed. It is therefore necessary to understand the relationships between economic and social development and fertility, which basically involves an identification of the main determinants of fertility and the ways and means of tackling them. It is beyond the scope of this paper to examine each of these determinants, As such, therefore, attention will be focussed on only those determinants which really have a direct or indirect effect on the pattern of fertility at a macro-level, and on the fertility behaviour of individual couples at the micro-level in the State.

Before examining the above issues, it would be interesting to look at the nature of demographic transition in order to better appreciate the position of the State vis-a-vis other populations, and thereby help in chalking out the path as well as the pace of regulating the fertility behaviour of the people.

Using Census data to estimate the birth rates as well as the fertility rate (in the absence of reliable birth and death statistics), Mizoram appears to have been in the first stage of demographic transition, perhaps till about 1941 after which it entered the second stage where it continues to remain. This conclusion is based on the rate of growth statistics over the past nine decades and the latest available data on fertility. Though the magnitude of fertility had not declined substantially from its natural state, that there has been an appreciable decline in mortality can be inferred from knowledge of one's surroundings, and above all the whole explanation fits into the theory of transition quite well. As we shall see later when we examine the level of fertility in the state, there has a slight decline in the fertility from 1971 to 1981.

Since the growth of population during 1971-81 seems to be unreal as mentioned earlier, the decline in the growth rate during 1981-91 as compared to 1971-81 is also not real. Therefore, there is no reason to believe that the growth of population in Mizoram has been arrested during the last decade, and it would be even more disastrous to conclude that it has begun to show a sharp downward fall. Though the family planning programme may have picked up in the State, the built-in population momentum as a result of each cohort of women in the childbearing ages being larger than the previous one, cannot be overlooked. It is also not very likely that the perception of an ideal family size at the individual couple level would have changed very much within the span of ten years. The mere number of couples protected will not give as any idea whatsoever about the success of family planning, unless these figures are cross-classified by different population characteristics such as age, number of children ever born and surviving, education, category of work, etc.

A closer examination of the level and pattern of fertility as well as the impact of different determinants of fertility, which will follow together with the points already discussed, would lead one to believe that the fertility level has not shown a significant fall during the last decade, whatever may be the claims made by the Health and Family Welfare Department of the State. Therefore, the State will continue to remain in the second phase of demographic transition for a longer time than one would have desired. While one is not inclined to underplay the role of migration as a determinant of the rate of growth, it is perhaps too insignificant a factor to alter the direction and pace of demographic transition.

Level and pattern of fertility

The latest available data on fertility obtained from the 1981 Census which fielded four questions on fertility relating to age at marriage, number of surviving children, number of children ever born, and whether any child was born during the last one year, permits the presentation of broad fertility indicators at the State and district level. Table 2 presents the total fertility rate (TFR) and the total marital fertility rate (TMFR) for all major religions of the State. The fertility rates have been presented religionwise because the Christian population of the State is closest to the tribal population (minus the Chakma tribes) which is all-Buddhist.

TABLE 2
Fertility indices, Mizoram, 1981

Religion	TFR	TMFR
Christian	4.1	6.7
Buddhist	3.4	4.3
Hindu	4.2	5.3
All religions	4.0	6.3

Table 2 shows that in 1981, Mizoram had a TFR of 4.0 and a TMFR of 6.3. Interestingly, though the total fertility of Hindus is slightly higher as compared to Christians, the total marital fertility rate of Christians exceeds that of Hindus by 1.4. This is mainly because of the lower percentage of married females among Christians. The Buddhist population has the lowest TFR and TMFR in the State. The TMFR of 6.3 was the highest among all the States and Union Territories of India in 1981, the national TMFR being 4.3.

Adjusting the indicators by the Brass procedure, gives the following adjusted and unadjusted values:

Adjusted and unadjusted fertility indicators, Mizoram, 1981

	Unadjusted	Adjusted
Birth rate (BR)	27.84	40.57
Total Fertility Rate (TFR)	4.00	5.80
Gross Fertility Rate (GFR)	116.00	169.00
Total Marital Fertility Rate (TMFR)	6.30	9.20
Gross Marital Fertility Rate (GMFR)	201.00	292.00

Another important measure of fertility is the number of children ever born (CEB) per women for ever married women. Though the age group 50 and above is considered to be more appropriate for calculating the completed level of fertility, since the number of children reported by this group is affected by omissions due to recall lapse, the age group 45-49 is taken for measuring the CEB. Table 3 shows the CEB both these age group

45-49 and 50+ and for all religions.

TABLE 3
Average number of children ever born per woman by religion in the age groups 45-49 and 50+, Mizoram, 1981

Religion	Age group (years)	
	45-49	50+
Christians	5.72	6.11
Buddhists	5.58	5.77
Hindus	5.65	5.43
All religions	5.70	6.04

The higher number of children ever born in the age group 50+ than in the 45-49 age group is indicative of the absence of under reporting of births in the former. Therefore the data on CEB appears to be of acceptable quality. It is possible then to draw the following conclusions about the level of fertility in Mizoram in 1981:

1. The total number of children that would have been born to a woman who is likely to complete her reproductive span and experience the fertility schedule as existing in 1981, is 5.8.
2. The average number of children ever born to a woman who has already passed through her reproductive period is 6.0.
3. The number of children that would have been born to a married woman who is likely to complete her entire reproductive span and experience the fertility schedule as existing in 1981 is 9.2.

Another interesting feature is the high level of adjusted TMFR value of around 9.2 which is one of the highest among all the States in the country, the TMFR for the country as a whole being 5.9. It appears that upto 1981 the fertility in the State was in an uncontrolled and natural state.

The 1971 Census canvassed only two questions namely age at marriage, and any child born during the last one year. Therefore, it was only in 1981, that more detailed information on fertility was collected. Unni and his co-workers[2] have estimated the total fertility rates for Mizoram by different regression methods, including Rele's method, the latter for five-year periods between 1961 to 1981. These estimates are presented in Tables 4 and 5.

TABLE 4
Total fertility rates for Mizoram estimated from regressions

Method		1971	1981
Palmore equation	Using unsmoothed data	4.65	4.34
	Using smoothed data	NA	5.00
Gunasekaran —Palmore equation	Using unsmoothed data	5.52	4.70
	Using smoothed data	NA	5.69

NA - not available

TABLE 5
Estimates of total fertility rate by Rele's method

	Refined method using unsmoothed age data	Original method using smoothed age data
1961-66	6.49	NA
1966-71	5.95	NA
1971-76	5.56	5.59
1976-81	5.53	5.46

NA - not available

The merits and demerits of the different methods notwithstanding, one can conclude there has been a slight decline in the fertility level during the 1971-81 decade. It is possible that this downward trend may have continued during 1981-91; however, this can only be conclusively proved when the 1991 data become available.

Religion wise age specific fertility rates and age specific marital fertility rates for Mizoram are presented in Table 6. The limitations of these unadjusted rates based on information on births occurring during the last year have already been discussed.

TABLE 6

Age specific fertility rates and age specific marital fertility rates by religion, Mizoram, 1981

Age group (Years)	ASFR				ASMFR			
	All	Christian	Hindu	Buddhist	All	Christian	Hindu	Buddhist
15-19	0.022	0.019	0.074	0.047	0.207	0.217	0.203	0.170
20-24	0.154	0.154	0.200	0.124	0.286	0.311	0.242	0.153
25-29	0.199	0.208	0.163	0.148	0.259	0.282	0.180	0.154
30-34	0.179	0.186	0.156	0.126	0.216	0.231	0.165	0.130
35-39	0.137	0.140	0.132	0.107	0.163	0.171	0.137	0.110
40-44	0.079	0.078	0.075	0.087	0.098	0.180	0.083	0.091
45-49	0.027	0.026	0.045	0.039	0.035	0.034	0.048	0.043

The ASMFRs are higher than the ASFRs because the former are ratios using only married women as the denominator. If we focus our attention on the ASMFRs, we find that, on average, during the last year (with reference to 1981), the number of live births to a married Christian woman is higher than that to a Hindu or Buddhist woman, irrespective of age. Thus, on average, a Christian woman delivered 1.085 children by 19 years of age, 2.64 children by age 24, and 4.05 children by the time she reached 29 years of age. The corresponding figures for a Hindu woman were 1.02, 2.23 and 3.13 respectively, and for a Buddhist woman 0.85, 1.62 and 2.39 respectively. If one were to work out these rates on the basis of adjusted ASMFRs by applying the P/F method and by applying the same P/F ratio as has been used to work out the adjusted ASFR, one would be surprised to find that by the time a married woman reaches 29 years of age she would have given birth to approximately six children if she happened to pass through the fertility regime as it existed during 1981 assuming that she would not be subject to the risk of death.

Table 7 gives a distribution of ever married women by parity. It shows that in 1981 already more than 50 per cent of ever married women had given birth to four or more children, and about 63 per cent had three or more children, which is extremely high when compared to the corresponding figure of 56.4 per cent for the country as a whole.

TABLE 7

Percentage distribution of ever married women by parity, Mizoram, 1981

Parity	Percent ever married	Cumulative percentage
0	1.8	89.9
1	13.18	88.1
2	12.28	74.9
3	11.39	62.6
4+	51.21	51.2

The percentages do not add up to 100 because 10 per cent of the women did not respond.

The figures also suggest how women who had completed their reproductive span had a much higher level of desired number of children. It would be interesting therefore to examine whether the desired number of children and perception of ideal number of children among women remains at a higher level.

Determinants of fertility

In brief, there are seven proximate or intermediate variables which directly influence fertility. Of these, the proportion of women married, contraceptive use, prevalence of abortion and postpartum infecundability are the most important, and explain 96 per cent of the variations in fertility as reported by Bongaarts[4] in his study of fertility levels in 41 countries. As mentioned earlier, we will confine this analysis to these proximate variables in the context of the situation prevailing in Mizoram during 1981, and examine the contribution of each of these determinants to fertility reduction.

Marital status

Since, in most situations, marriage is an essential pre-requisite for sexual union, the proportion of women married is taken as a fairly reliable estimate of the level of exposure to consensual union. However, the possibility of such unions before marriage or outside marriage should be borne in mind. In India and in many other countries, such unions are followed by abortion if pregnancy occurs. This results in a reduction in the index of induced abortion.

In the tribal societies of Mizoram since the event of having a child out of marriage is not considered to be a social taboo, one would be inclined to believe that the proportion of legitimately married women would not be a reliable estimate of the proportion of women exposed to consensual union. It should be understood that a woman delivering a child out of wedlock, is treated as married according to the Census data on fertility, and for all practical purposes she is treated as married. Therefore, under the assumption that every woman exposed to sexual union outside marriage has had a live birth, an estimate of the proportion of married women can be considered as a fairly reliable estimate of exposure to sexual union.

The marital status of females from 1921 to 1981 presented in Table 8 shows that the proportion of married females has been fairly stable since 1921 and it would be safe to conclude that the age at marriage in Mizoram has been traditionally high.

TABLE 8
Marital status of females, Mizoram, 1921-91

Year	Percent married	Percent widowed	Percent divorced/ separated
1921	32.9	17.6	NA
1931	32.7	13.9	NA
1941	32.1	11.8	NA
1951	33.6	6.9	3.4
1961	33.5	6.2	2.7
1971	30.7	6.3	2.7
1981	33.7	5.2	3.0

NA - not available

The decline in the percentage of widowhood is an important factor influencing the level of fertility, since its reduction would tend to increase the proportion of married women, if age at marriage remains constant. The faster fall in the percentage of widowed women after 1941 and the slight increase in the percentage of married women would lead us to believe that the age at marriage of females has, in fact, increased over the years. The sudden decrease in widowhood after 1941 may be prima facie taken as a sharp reduction in the general level of mortality, thereby strengthening the author's earlier observation that the State entered the second phase of demographic transition only after 1941.

The "index of marriage"—C_m, as given in Bongaarts' model is the proportion of married females in the reproductive age group to the total females in that age group. If one considers 15-44 as reproductive age group, 56.2 per cent of the females are found to be married and therefore, the value of C_m

for Mizoram can be taken to be equal to .562 which is surprisingly even less than that of industrialised countries. (The value of C_m for the country as whole in 1981 would be 805). Therefore, the low proportion of married females in the age group 15-44 accounts for a 44 per cent reduction in fertility in the State from the potential level.

Contraception

Contraception is the most important way of regulating fertility and perhaps the only method which involves direct intervention. There are various ways in which contraception is measured, the most common being the couple protection rate. The use of contraception and fertility are negatively associated and operate in both directions. While the effect of contraception is widely known, it should be understood that past fertility experience will dictate the future use of contraception in order to attain the desired number of children.

Since the family planning programme was introduced as late as 1974 in Mizoram, it may not have gathered the required momentum to influence fertility to a great extent. In 1981, fertility had not fallen significantly from the 1971 level thereby indicating no impact whatsoever of the family planning programme on fertility at least upto 1981. The impact of the programme thereafter cannot immediately be measured. Therefore, an assumed value of C_c (the index of contraception) very near to unity for 1981 as in case of Bangladesh or Pakistan will perhaps not be very far from the actual value.

Abortion

Abortion is an important variable with a strong negative effect on fertility in many industrialised countries. Abortion data are hard to collect and often, for this reasons, it is not considered in empirical research on fertility. However, one can get some idea about the incidence of induced abortion from hospital statistics.

In Mizoram, since a child born out of wedlock is "recognised" by the tribal society, induced abortion is expected to remain at a very low level among unmarried women. Induced abortion among married females in the State would also be negligible. Therefore, the value of C_a can be taken to be equal to 1 or very near to it.

Postpartum infecundability

The primary cause of postpartum infecundability is breastfeeding. It has been well established that both the duration and intensity of breastfeeding are associated with the length of the period of infecundity after childbirth. Breastfeeding is found to be mainly a societal practice, but social and economic development in any society and western influence could result in a reduction in it.

The wide variation in breastfeeding practice across countries can be observed from the indices of infecundity for different countries[4]. On average, women in the least developed countries are reported to breastfeed their babies 2.5 times longer than do women in the more advanced developing countries. The importance of postpartum infecundity in reducing fertility from its potential level in Bangladesh has been demonstrated by Bongaarts[4]. With estimates of the indices of marriage (C_m), abortion (C_a), and contraceptive use (C_c), each being very near to 1, the high degree of breastfeeding practice (or in other words, a very high value of the index of infecundity) in Bangladesh has been the main and only variable explaining the reduction of the total fecundity rate from 15.3 to as low as 6.54. It has been estimated that if breastfeeding practices in Bangladesh were to change to match those of the industrialised world, the level of fertility would increase by over 50 per cent.

It is widely known that breastfeeding practices in Mizoram, particularly among the tribals (who form more than 90 per cent of the population of the State) is very intense and of much longer duration. The absence of any data in this regard will make it impossible to estimate the value of C_i, the index of infecundity. We may try to estimate C_i under the assumption that estimated TFR = actual TFR which was 5.8 (adjusted) in 1981. The estimates of the value of the different indices for the State were as follows:

$C_m = .562,\ C_c = 1.0,\ C_a = 1.0$

Then $5.8 = 15.3 \times .562 \times 1.0 \times 1.0 \times C_i$,

$$\text{or, } C_i = \frac{5.8}{.562 \times 15.3} = .674,$$

which is almost equal to the estimated C_i for Kenya[3]

If we now choose the value of C_c and C_a to be .976 and .999 which are qual to the corresponding values for Kenya and USA[3], we will have

$$C_i \quad \frac{5.8}{15.3 \times .562 \times .976 \times .999} = .691$$

Therefore, a comparison of the estimated and assumed values of indices of Mizoram with the corresponding estimates of different countries helps us to understand the levels at which the different proximate variables are operating vis-a-vis other countries and populations.

Fecundability, spontaneous intrauterine mortality and permanent sterility

These three variables find very little importance in empirical research on fertility determinants since they are not thought to be powerful enough in explaining differences in fertility. It is also difficult to get the required data on these variables. However, an idea of permanent sterility can be had by looking into the data relating to the proportion of childless ever married women aged 50 and above. This was found to be only 0.74 for Mizoram, which is the lowest among all the States and Union Territories of India, the corresponding all-India ratio being as high as 5.49.

The proximate variable approach of looking for the dominant determinant of fertility for the State has thus led us to the conclusion that it is only the low proportion of married females in the reproductive ages (having a value of only .562), which also appears to be the only non-natural factor, that induced a reduction in fertility. The other most important factor (which is the biological factor or natural factor) responsible for holding the fertility to a value lower than its potential value is postpartum infecundability through prolonged and intense breastfeeding.

The high age at marriage is a traditional phenomenon in the tribal society of Mizoram and therfore not likely to have been appreciably influenced by the increasing educational attainment of women and their greater participation in the work force. The very low value of C_m was not a result of any socio-economic development or extraneous non-natural factors, and therefore considered to be a natural characteristic of the population. Breastfeeding not being practised consciously to reduce fertility at the individual level, as also the low proportion of married women being a natural phenomenon, it would be an overstatement to say that in Mizoram, fertility appears to have been at an uncontrolled and natural state upto 1981, and perhaps, still continues to be so.

Social, cultural and economic variables

Having broadly discussed the contribution of the different proximate variables in explaining the level of fertility, it would be worthwhile to examine some social, cultural and economic variables which are supposed to have been the main determinants of fertility in the State. All these variables necessarily operate only through the proximate variables, and this has already been discussed earlier. In order to completely understand the fertility behaviour of a society or population however, it would be absolutely essential to study how individual couples in that society determine their family size.

Variables relating to individual characteristics which influence fertility behaviour are many and may vary across populations. Since fertility decisions at the individual or individual couple level aggregate themself over the population, any attitudinal or behavioural change in this regard at that lowest level across the population will bring about a change in the values of the social and cultural macro-indicators of the population, which will ultimately lead to changes in fertility through the proximate variables. At times these seem to operate in the opposite direction. Therefore, it is difficult and perhaps not necessary to make a distinction between the social and cultural variables at the macro-level, and also socio-cultural attitude at the individual level, as determinants.

One of the strongest considerations in decision making with regard to the number of children that an individual couple would like to have, are economic considerations. There are a large number of such theoretical models which are oriented towards explaining household level differences in fertility. However, the underlying assumption in such models is that individual couples behave rationally in deciding the desired number of children by weighing the advantages or disadvantages of additional children, which, however, may not be true. Since it is not possible to study such complex behaviour among individual couples in the absence of data, this issue has been left out in the discussion which follows. However, useful micro-level surveys can be taken up to study the fertility behaviour of individual couples and the economic factors influencing their decisions. Let us now examine the different dependent variables influencing fertility in Mizoram.

Urbanisation

Though it may not be possible to examine upto what extent the increasing costs of raising children in an urban life style has influenced fertility, in general, decisions taken by individual urban couples constrained to limiting their families on this count, can be subject to enquiry at the micro-level. One thing which clearly comes out is the urban-rural differential in fertility in the State. Table 9 clearly brings out the apparent difference in fertility between rural and urban areas.

TABLE 9
Fertility indices, Mizoram, 1981

	All areas	Rural	Urban
Birth rate (adjusted)	40.57	42.65	34.99
TFR (adjusted)	5.80	6.30	4.30
TMFR (adjusted)	9.20	9.70	7.80
GFR (adjusted)	169.00	179.00	141.00
CMFR (adjusted)	292.00	304.00	261.00
Average number of children ever born to a woman per age group	5.70	5.84	5.18
Percentage of ever married females with 4 or more children	51.21	52.50	47.01

One should, however, not take a simplistic view that rapid urbanisation is the answer to reducing fertility.

Female literacy

The negative effect of education, and especially women's education, on fertility has been fairly well established in many populations. The reasons are several. Literate women marry later than illiterate women, they happen to be more knowledgeable about matters of health and hygiene which helps reduce child mortality and, in turn, motivates couples to reduce the number of births to achieve the desired family size.

A recent study by Sharma and Retherford[5] has shown that the phenomenon of female literacy having a strong negative effect on fertility is also true in the case of India. Using district level data for 14 major states, each with more than ten million population. Because literacy is highly correlated with urban residence, urban-rural residence was also included in the analysis. And, because literacy affects fertility not only directly but also indirectly through child mortality and age at marriage, child mortality and mean age at first marriage were incorporated as intermediate variables, for which multiple regression was used. The main finding was that an increase of 10 percentage points in the female literacy rate reduces the total fertility rate by slightly less than one-half child per woman. The predicted total fertility rate for a district with a female literacy rate of 20 per cent is about 5.1 children per woman, and that for a district with 80 per cent female literacy is about 2.3 children per woman.

The literacy rate among women in the State is a matter of pride and quite rightly so. In 1981, the female literacy rate of Mizoram was 54.9 per cent, and it increased to 64.1 per cent in 1991. If one were to use the regression equation fitted by Sharma and Retherford, with a literacy rate of 54.9 percent, the TFR for the State should have been 3.4 which is no where near the actual TFR of 5.8 worked out on the basis of 1981 Census data. Even though female literacy has risen by almost 10 percentage points during the last decade, fertility does not appear to have undergone much of a change. It can therefore be concluded that literacy per se does not have much of a negative effect on the fertility status in the State. Let us examine whether the educational level has any impact on the fertility level.

A cursory look at the table reveals that upto an educational level below middle school for women who had already completed their reproductive period, there has been no reduction in fertility. A fall is observed only in the group of women who have attained the a middle school education and above, and this constituted only 0.46 per cent of the total number of literate ever married women of age 50+.

In 1981, the literacy rate of the female ever

TABLE 10

Education, average number of children ever born and percentage distribution of literates among ever married females, Mizoram, 1981

Educational level of ever married women	Average number of childern ever born to married women aged 50+	Percentage distribution of ever married women among	
		women aged 50+ among literate women of the same age group	women of all ages among literate women of the same age group
Illiterate	6.02	-	-
Literate but below middle school	6.13	98.6	88.0
Middle school but below Matriculation	4.57	0.7	6.5
Matriculation but below graduate	4.36	0.6	4.8
Graduate and above	3.18	0.2	0.7
All	6.05	-	-

married population aged 50+ was only 32.7 per cent and it was very much less than 54.1 per cent for the total female population at the same point of time. Among ever married literate women aged 50+, 98 per cent were in 'literate but below middle school' group, and for all ever married women, the corresponding figure was 88 per cent which was still large considering that these women would not have pursued further studies. In rural areas, where 77 per cent of the ever married women live, almost 94 per cent of the literate women were in the 'literate but below matriculation' group.

If CEB and TFR are expected to be close to each other, the application of Sharma and Retherford's[5] equation by putting the literacy rate of 32.7 as the value of the dependent variable would yield a TFR of 4.5, which is again no where near the actual CEB of 6.05.

It may not be possible at this stage to give an idea about the extent of the negative effect of literacy on fertility in other States and the country as a whole. Though the effect of overall female literacy is almost insignificant in Mizoram, the effect of education as expressed in terms of grade of schooling is distinctly visible. As is evident from Table 10, the fertility behaviour of about 88 per cent of the ever married women who dropped out before completing middle school, strongly influenced the average fertility rate in the State. One would have liked to break up the 'literate but below middle school' group into 'literate but below primary' and 'primary but below middle', and then study the fertility differential. This, however, could not be done in absence of relevant tabulated data. The Education Department of the State should, therefore, address itself to the problem of girls dropping out from school before attaining the middle level, and try and motivate them to continue their education. Since a commendable level of literacy has been achieved, it should not be difficult for the Department to shift its emphasis in this direction.

Age at marriage

Empirical research has shown that age at marriage can be a policy tool to influence fertility. One of the avenues of raising the age at marriage of women is raising their literacy, and more importantly, their level of education. Let us examine the age at marriage data for Mizoram given in Table 11.

TABLE 11
Mean and median age at marriage of currently married women, Mizoram, 1981

	Mean age at marriage (years)	Median age at marriage (years)
Rural	20.1	19.8
Urban	20.5	20.3
Total	20.2	19.9

The mean age of marriage of 20.2 for Mizoram is the highest in the country, apart from that of Nagaland which is also the same. The urban mean age at marriage of 20.5, is the highest in the country. The median age at marriage i.e. the age by which half of the females are married, is estimated to be 19.9 and is second to only Nagaland but remains the highest among all the States and Union Territories of the country. The mean and median ages at marriage for India in 1981 were 16.7 and 16.3 respectively.

We have already discussed that the age at marriage for females has been traditionally high in Mizoram. The increase in literacy, therefore, has in no way been a major contributor in this regard. Though, an increase in the educational level is generally believed to increase the age at marriage. it is not so significant: a rural woman in the 'Matriculation but below graduate' group was observed to have married only 1.8 years later than her counterpart who was illiterate; and an urban woman of the former group only a year later than her illiterate counterpart. The corresponding figures for India in 1981 were 3.0 years and 2.1 years respectively.

Higher age at marriage reduces the reproductive span of the female and thereby negatively influences fertility. Here we have a situation in which a State has one of the highest female literacy rates in the country and the highest age at marriage for females and yet, has one of the highest fertility rates. Hence, our search for the most important variable should continue.

Infant and child mortality

Infant and child mortality have been found to have a very strong effect on fertility in a large number of countries across the globe. This influence may be through both biological and behavioural mechanisms. The actual or anticipated death of children may motivate parents to achieve higher fertility in order to offset these real or potential losses. The death of an infant may also have the important biological effect of shortening the interval to the subsequent birth by prematurely ending the mother's lactation. Table 12 gives the infant mortality rates in Mizoram and India for 1981.

TABLE 12
Infant/child mortality rates, Mizoram and India, 1981
(q(i) denotes the number of deaths per 1000 live births by age (i))

q(i)	India	Mizoram
q(1)	115	69
q(2)	123	81
q(3)	132	88
q(5)	152	103

It is clear from Table 12 that in 1981 all the q values were much lower in Mizoram than in India. Mizoram thus has one of the lowest infant/child mortality levels among all States for all values of i (age). The reason for such low levels is hard to find and this certainly is one area where some micro-studies can be undertaken. It is known that female literacy tends to reduce infant and child mortality rates. However, the absence of time series data on these indiators prevents us from drawing any conclusion in this regard, especially for the State. However, the differential in the rates for different levels of maternal education is apparent from Table 13.

TABLE 13
Infant mortality rates (q(2)) by maternal education, Mizoram, 1981

Educational level	q(2)
Illiterate	133
Literate but below middle school	76
Middle school but below Matriculation	35
Matriculation but below graduate	41
Graduate and above	NA
All	81

NA - not available

Such differential rates are also seen in case of place of residence (rural-urban), occupation of mother, religion and tribe (table not given). For example, the infant mortality rates among Christians and Hindus in 1981 for the State were 65 and 129 respectively. The author would not like to hastily conclude that that the strong negative effect of child mortality on fertility has proved to be wrong in Mizoram. Firstly, because data on infant mortality for earlier years are not available, and therefore, it cannot be said for certain that the reduction in infant mortality is a recent phenomenon and/or is the result of better knowledge of hygiene among women, improved nutrition of infants and children, or the success of the immunisation programme. Secondly, if this reduction is a recent phenomenon, the behavioural mechanism in response to it would be set in motion after a lag of time. One, therefore, has to wait for the tabulated results of the 1991 Census before coming to any conclusion.

Participation in work force by women

It is generally believed that female participation in the labour force has a substantial negative effect on fertility. The mechanisms through which female employment operate to influence fertility behaviour are varied and depend on the type of work. The linkages between the work and fertility, to name a few, are incompatibility of child care and work, increased opportunity of women's time upon entering the labour force, exposure to smaller family size norms and different attitudes towards women's role, and greater accessibility to information particularly that concerning family planning and delayed marriage. However, the difficulty in arriving at a precise definition of labour force participation and measuring it empirically has hampered the formation of a clear-cut view on the subject. Table 14 indicates the work force participation of women in Mizoram and India as a whole, for 1971 to 1991.

TABLE 14
Work force participation of women, India and Mizoram, 1971 to 1981

Year	of female main workers to total population	
	India*	Mizoram
1971	12.06	39.46
1981	14.00	32.32
1991	16.43	34.43

* excludes Assam for 1981, and Jammu and Kashmir for 1991.

The fall in the percentage of female main workers in Mizoram between 1971 and 1991 is not a matter of immediate concern. It would be worthwhile rather, to look at the high percentage of women in the work force in Mizoram as compared to India as reflected in the last three Censuses. This is one of the highest rates among all the States and Union Territories in the country. This, however, has not proved to have any salutary effect on the fertility level of Mizoram so far. The average number of children ever born (CEB) for ever married women in Mizoram by occupation is given in Table 15.

TABLE 15
Average number of children ever born to ever married women aged 50+ by occupation, Mizoram, 1981

Occupation	Average no. of CEB
A. *Urban*	
Main worker	5.6
Non-manual	5.0
Manual	5.9
Marginal worker	5.6
Non-worker	5.9
B. *Rural*	
Main worker	5.8
Cultivator	5.9
Agricultural labour	4.7
Non-manual	4.7
Manual	4.9
Marginal worker	6.5
Non-worker	6.2

It is evident from Table 15 that in 1981, the value of completed fertility was lower among women main workers pursuing non-manual occupations both in the urban and rural areas. The fertility rate of urban main workers was equal to that of urban marginal workers in urban areas but the fertility of rural main workers was lower than that of rural marginal workers. In both areas, non-workers had a higher completed fertility rate. Thus, women at work, on average, had fewer children than non-working women, and the intensity of their involvement in work and the type of occupation also influenced their fertility behaviour. The large proportion of women who remain outside the work force or are engaged in work other than non-manual with high fertility explain the absence of any impact, whatsoever of the overall work force participation rate of females on fertility in Mizoram.

Factors influencing fertility in Mizoram

The question one can ask now is—have we been able to find the main cause of the high fertility of Mizoram? We have thus far identified the two main proximate determinants [the (lower) proportion of married women in the reproductive ages, and postpartum infecundity] that have maintained fertility at a level much below its potential level, and the extent to which they influence it, using certain assumptions (this may, however, be slightly different, if deeper studies are undertaken). We have also seen that the major socio-economic factors such as female literacy, female age at marriage, infant and child mortality, and women's participation in work force have not been able to bring about any reduction in fertility in the State, though the pattern when studied across different levels of some of these factors e.g. education as shown here, suggest a threshold level after which they tend to influence fertility.

The higher age at marriage in Mizoram then, which is a cultural aspect of its tribal society has apparently not been influenced by the socio-economic changes which have taken place over the years. And, even if it were influenced, it has probably been at a very insignificant rate. It may also be noted that the value of C_m (the index of marriage) perhaps, cannot be stretched beyond a limit and will become stable after a certain point of time. The only option therefore is a quick reduction in the value of C_c (the index of contraception), which implies an increase in the rate of contraceptive practice.

Let us now try to isolate the variables responsible for the non-decline in the fertility level in the state.

Socio-cultural factors

These factors appear to have had the strongest impact on fertility in Mizoram. The commonly mentioned factors in the literature on fertility are religion, ethnicity and family structure. One can immediately rule out religion as a barrier but the last two variables prima facie can be taken as the two major determinants of fertility. However, in-depth studies with respect to these variables and their impact on fertility decisions at the individual level can be taken up.

Family structure would include either the family size desired by an individual couple or the ideal number of daughters or sons which they would like to have. The latter would have a stronger positive impact on fertility because, on average, every couple invariably has to produce more children to arrive at desired family size. Perhaps, such factors have also been operating strongly, and are still operating at the individual level, and could be studied further.

Another important 'ethnic and cultural factor which is known positively influence fertility is the preference for the male child. The laws/rights relating to the inheritance of property in Mizoram still work to the disadvantage of the female child. Besides continuation of the 'ethnic family line' and old age security, the growing nuclearisation of families resulting in growing emotional bonds with one's own children and the attendant obligations towards them rather than towards relatives, could be one of the reasons for this preference.

A detailed study of the fertility behaviour of individual couples may indicate that the socio-cultural norms of society largely outweigh economic considerations in decisions concering family size. Rational family planning/size behaviour may be totally non-existent among such couples till such time as they attain a certain level of fertility.

However, no such conclusions can be drawn unless micro-level studies are done to understand the attitudes of these couples.

Late introduction of the family planning programme

It has already been mentioned that the family planning programme in Mizoram started only in 1974. Prior to this, there was no way in which the government could have intervened to increase contraceptive use; that is, the only proximate variable which could influence fertility was not under control. Individual couples thus had no means of regulating their fertility level even if they wanted to. The only method available was the natural method which meant abstinence from sexual union.

Conclusion

The priority areas in which the government as well as the other institutions can focus their attention in order to keep the growth of population under check can thus be as under:

1. *Vigorous implementation of the family welfare programme:* With all other socio-economic variables under control, Mizoram can be considered to be in a perfect condition for a "take off" in the direction of a decline in population growth. The only variable to be brought under control is contraceptive use. The family planning programme should be vigorously implemented to launch a direct attack on fertility.
2. *Involvement of religious leaders, village councils and voluntary agencies:* Social and cultural barriers including ethnicity have been identified as a stumbling block in the reduction in fertility. Ideal and desired family size still appears to be operating at a higher level, and many couples are unsure about their ultimate family size. These stringent self-imposed norms again operate fairly strongly on those groups which are below the threshold levels of the different socio-economic variables. The involvement of religious leaders, village councils and different voluntary agencies is absolutely essential to break these social and cultural barriers. The easy accessibility of religious and local administration services even at the farthest corner of the State can be used to its fullest advantage.
3. *Role of the Education Department:* It should be the endeavour of the Education Department to create an awareness among children at the school level about the impact of population growth on development, environment etc., and the need to limit family size.
4. *Effective implementation of child care programmes:* Though infant mortality in Mizoram is among the lowest in the country, as compared to that of other developed countries, the State still has a very long way to go.
5. *Advocacy of breastfeeding practice:* The value of Ci worked out for Mizoram is the lowest among different countries as reported by Bongaarts[4]. If breastfeeding practices in the State were to be compared to those of the industrialised world in 1981, with the values of the other proximate variables being what they were, the level of fertility would have been 34 per cent higher. Therefore, the government should encourage the already deep-rooted cultural tradition of intense and prolonged breastfeeding, though policies and programmes. If infecundity due to diminishing breastfeeding practices should decrease and contraceptive use does not increase at a much faster rate, the State will never be able to recover from the serious problem of population growth, and will continue to remain in the second stage of demographic transition for a much longer period.
6. *Creating a database on population and vital events and encouraging population*

research: This is an important aspect towards which the State Government should pay attention. It should encourage research on population studies including knowledge, attitude and practice surveys on family planning.

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Demographic, socio-economic and medical factors affecting maternal mortality– An Indian experience

Dr. P.N. Anandalakshmy, Dr. P.P. Talwar, Dr. K. Buckshee and Dr. V. Hingorani

Introduction

India has made appreciable progress in improving its overall health status since the beginning of the century. The crude death rate has declined, but there is no sign of a decline in the maternal mortality rate. Also, most of the evidence relating to high maternal mortality rates is fragmentary. In many parts of the world where maternal mortality is highest, deaths are rarely recorded, and even when they are, the cause of death is usually not given. Thus, it is essential to understand the factors which cause maternal deaths so as to plan efficient interventions which can help to reduce maternal mortality.

In this paper an attempt has been made to examine the factors which affect maternal mortality through a case control investigation. Further, the relative importance of each of these factors has been studied by determining their relative risk using odds ratio.

Methodolgy

The data for the study was collected through a one-to-one pairwise matched case control study design. The sample comprised of 252 cases (maternal deaths) which occurred during 1983-1985 at the Safdarjung Hospital, New Delhi and an equal number of suitably matched controls (maternal survivors) for the same period. For each maternal death, a maternal survivor of the same age, parity and registration status for antenatal services (i.e. booked or unbooked) was selected. Matching was done to increase the precision of comparison.

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The data was subjected to univariate analysis. The contingency table was used to test whether the factors had affected the risk of maternal mortality[1]. If the factor was found to affect risk, then the relative risk was estimated by odds ratio[1]. The factors considered were age of mother, parity, birth interval, jestational age and outcome of index delivery, mothers education, residence and family income.

Results

There were 252 maternal deaths during the reference period (January 1, 1983 — December, 31, 1985) in the hospital. Table 1 presents the incidence of maternal mortality per 1000 obstetric admissions for selected characteristics of the study population. It shows that maternal mortality was 3.4 times higher among mothers aged 35 or more as compared to mothers aged 20-24 years, and nearly three times higher than that of teenage mothers. Parity specific maternal mortality rates were higher among women who had not had a live birth (nullipara) and women who had experienced five or more childbirths. The trend exhibits a typical J-shaped distribution which is consistent with various findings reported in the literature[2]. The maternal mortality rate was nearly double when the birth intervals were less than two years as compared to longer birth intervals of three years or more.

The socio-economic characteristics revealed a negative association between maternal mortality and mother's educational status (Table 1). Illiterate mothers experienced the highest mortality. The least survival condition was experienced among the poorer strata of the society, and maternal mortality was higher among rural as compared to urban mothers even when rural mothers were brought to the hospital, often in a critical condition for delivery.

Among the medical characteristics, maternal mortality was as much as 21 times

TABLE 1
Maternal mortality by selected characteristics

	Maternal mortality rate	No. of obstetric admissions
Total	5.8 (252)	43,749
Demographic:		
Age of mother (in years)		
15-19	5.3 (16)	3,019
20-24	4.5 (86)	19,250
25-29	5.5 (85)	15,399
30-34	8.2 (33)	4,025
> - 35	15.6 (32)	2,056
Parity		
0	5.4 (83)	15,269
1	3.8 (52)	13,694
2	6.4 (54)	8,487
3	6.6 (26)	3,937
4 +	12.5 (24)	1,925
Interval since last childbirth		
< 2 years	8.9 (61)	6,869
2-3 years	6.1 (30)	4,944
3 + years	5.0 (28)	5,566
Primipara	(79)	14,918
Socio-economic:		
Education of mother		
Illiterate	11.5 (164)	14,262
Primary level	6.4 (12)	1,881
Middle school	4.0 (7)	1,750
High school & above	2.0 (7)	3,588
Place of residence		
Rural	110.3 (111)	1,006
Urban slum	3.8 (61)	16,012
Urban	3.0 (81)	26,731
Family income per month		
< Rs. 300	16.9 (133)	1,138
Rs. 300-1000	3.8 (38)	9,887
> Rs. 1000	0.8 (5)	5,168
Medical:		
Registration status for antenatal care		
Booked	0.5 (11)	21,306
Unbooked	10.7 (241)	22,443
Gestational age (weeks)		
< 32	9.9 (53)	5,381
32-36	30.1 (50)	1,663
37 +	4.1 (149)	36,705
Outcome of index delivery		
Live birth	2.6 (94)	36,137
Still birth, abortion etc.	13.8 (105)*	7,612

53 mothers died before delivering.

higher among unbooked cases (Table 1). Maternal deaths were minimal among mothers who had delivered at term (gestational age of 37+ weeks) as well as among mothers who had delivered a live baby.

The relative risk (RR) (odds ratio) of various risk factors associated with maternal mortality is summarised in Table 2. A remarkable variation was observed in the relative risk associated with various risk factors estimated by the odds ratio. The findings suggest that having many children at short birth intervals or at unfavourable ages endangers a woman's life. The findings (Table 2) convincingly support the fact that anaemia resulting from malnutrition is a particular scourge of women in developing countries and may be one of the precipitating causes of maternal mortality. The results (Table 2) also demonstrate that obstetric risk factors like haemorrhage, PIH and sepsis are significant contributors to the risk of maternal mortality.

TABLE 2

Relative risk (RR) estimates of various risk factors of maternal mortality with 95% confidence intervals (95% CI)

Risk factor	R R estimates 95% CI
Demographic	
Mother's age at birth below 20 years or 35+ years Vs ages between (20-35) years	2 18 (1 59 - 2 99)
Parity 0 and 4+ Vs parities (1-4)	1 38 (1 06 - 1 79)
Birth interval of >24 mths Vs longer birth intervals	2 50 (1 49 - 4 32)
Experience of previous deliveries abnormal Vs normal	N S
Social/environmental	
Non-use of antenatal services Vs use of antenatal services	24 80 (11 24 - 54 10)
Medical	
Presence of hyperpyrexia Vs absence of hyperpyrexia	12 89 (6 92 - 26 55)
Presence of severe anaemia Vs absence of severe anaemia	6 80 (3 90 - 12 50)
Obstetric	
Presence of haemorrhage as a complication Vs absence of haemorrhage	3 50 (2 06 - 6 38)
Presence of PIH as a complication Vs absence of PIH	2 88 (1 74 - 4 92)
Presence of puerperal sepsis as a complication Vs absence of puerperal sepsis	36 50 (5 73 - 207 33)

Discussion

The study has identified the following risk factors in order of degree of risk.

1. severe anaemia assessed by an haemoglobin level below 8.5 g%
2. presence of haemorrhage as a complication of pregnancy
3. presence of toxaemia as a complication of pregnancy
4. a short birth interval of less than two years since the last childbirth
5. mother's age below 20 years or 35 years and above
6. parity 0 to 5 or more.

The findings clearly reveal that severe anaemia is a potent killer of pregnant mothers. Hence there is an urgent need to educate women particularly in regard to prophylaxis against nutritional anaemia and to provide iron and folic acid antenatally. The need and importance of antenatal care and a routine check-up should also be emphasised. The findings thus clearly indicate that the timing of conception affects the risk of maternal mortality.

Notes

1 It may be noted that 52 7 per cent of the 33,053 deliveries performed at the Hospital during the reference period were booked for antenatal care Two hundred forty one of the 252 cases (maternal deaths) were unbooked. Hence, the risk factor that is, the non-use of antenatal services seems to show a very high risk in this study. Also, most

of mothers were brought to the hospital in a critical condition. Therefore, this high risk is an exaggerated picture of the risk.

In this study, among maternal deaths, 49 mothers had heart disease, 41 had tuberculosis and 68 had jaundice during the course of pregnancy. In contrast, among the maternal survivors, except for one mother who had tuberculosis, none suffered from these high risk medical conditions. Therefore, it is not possible to calculate the odds ratio from the data. But the prevalence of these medical conditions suggests a very high risk.

The study population showed only two mothers who survived in presence of puerperal sepsis whereas 73 mothers died with sepsis. This risk factor showed a very high odds ratio of 36.5. Hyperpyrexia also showed a very high risk. There were 18 mothers with this factor among the maternal survivors. In contrast, among those who died, 113 mothers had this risk factor.

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Psycho-social determinants of contraceptive initiation in India

Dr. P.K. Baburajan and Dr. R.K. Verma

Introduction

India's efforts to promote family planning have produced a significant increase in the couple protection rate (CPR) which has increased by about 33 per cent during the last 22 years—from 10.4 per cent in 1970 to 43.5 in 1992. However, the quantum of increase has not produced a matching decline in the country's crude birth rate which registered a decline of only about 5 percentage points during 1970 to 1988[1]. One of the reasons for this gap is the overemphasis on the sterilisation programme which has failed to motivate couples of lower ages and parity to plan their families. Further, there has been a substantial increase in the proportion of women in the reproductive ages which is unfavourable to a decline in the birth rate. It is estimated that this upward trend in the proportion of women in the reproductive ages is likely to continue till the end of this century[2].

In order to offset the stalling effect of the rising proportion of women in the childbearing ages on the birth rate, the effective use of contraceptive methods needs to be enhanced significantly. The young age structure of the growing population, therefore, demands a greater emphasis on the promotion of spacing methods, particularly in the early stages of marital life. Since first-time acceptance of a method or contraceptive initiation is largely dependent upon psycho-social factors which are internal to individuals, any effective intervention to promote early acceptance will depend upon these individuals. While very few studies have examined the psycho-social factors associated with early acceptance, they support the fact that some acceptors start using a method earlier than others, and that the factors associated with early acceptance are different from those associated with late acceptance[3,4]. In view of these observations, an attempt has been made in the present paper to examine the psycho-social factors associated with contraceptive initiation.

Theoretical considerations

Theoretically, it is plausible to assume

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that the earlier in married life a couple decides to accept family planning, the stronger will be their desire to have a planned family. Early acceptance not only helps achieve the desired gap between births but also contributes substantially to reducing subsequent fertility because fecundability during the early reproductive years would be higher than in the later years. A woman who accepts a family planning method early in her married life is expected to possess a characteristic pattern of behaviour which is different from that possessed by a late acceptor.

When early adoption is the result of planning or purposeful behaviour, individuals may differ with regard to their motivational pattern and attitudes towards various aspects of life in general, and family planning behaviour in particular. While socio-economic characteristics are closely associated with psychological characteristics, behaviour has very often been shown to be independently affected by psychological characteristics. An individual's behaviour is determined by a set of psychological factors which operate in a holistic manner. Broadly, two types of psychological dimensions can be viewed as affecting contraceptive behaviour.

1. *Personality traits of an individual:* these are considered as the innermost traits or structures which organise a person's behaviour into a basic pattern and are relatively stable throughout the individual's lifetime[5]. From the viewpoint of acceptance of family planning, the following personality traits, measured in terms of needs, have been shown to be important: Achievement(n-Ach), Order(n-Ord), Autonomy(n-Aut), Nurturance(n-Nur), Change(n-Cha), Endurance(n-End) and Aggression(n-Agg)[3,4,6-9]. It is expected that women with higher needs of these personality dimensions, except the need for aggression will be more likely to accept a method earlier than those with lower needs. In the case of Aggression, the reverse is expected.

2. *Attitudinal and perceptual dimensions:* these are time and context specific and are likely to be modified over time[10]. Attitude towards family planning, knowledge about family planning methods, ideal family size, and husband-wife communication are considered important attitudinal and perceptual dimensions which affect early and late acceptance. Early acceptors as compared to late acceptors are likely to have more favourable attitudes towards family planning, higher knowledge of family planning methods, a small ideal family size and better interspousal communication.

Sample and Methodology

The data for the present paper was collected as a part of a study on the determinants of contraceptive choice conducted in an industrial township located in Greater Bombay during May-August 1991. This public limited organisation employed about 7,000 workers and maintained a township consisting of 5,962 households. The rationale for choosing this area for the study was that it provided a heterogenous sample of urban service class respondents who were expected not only to have a high level of contraceptive use but also a wider choice of contraceptives.

Five different occupational categories were identified in the township. On the basis of a complete enumeration of eligible couples from available office records, a list of eligible couples was prepared for each of the five strata. The total number of eligible women in all the five strata was 4,571. Adopting the technique of stratified random sampling with proportional allocations for the five strata, a 10 per cent sample of eligible women was drawn. A sampling interval for each stratum was calculated on the basis of size, and the sample size was fixed for that particular stratum. A number for the sampling interval was randomly selected for a random start. Exactly 10 per cent of the total number of households with eligible women i.e. 457 could not be achieved either due to non-availability (locked household) or the woman being pregnant at the time of the interviewer's visit. As a result, 412 currently married non-pregnant women in the age group of 15-44 years were interviewed. Of these, there were 347 (84.2 per cent) ever users which included 317 current users.

The questionnaire for the interview included items on household and background information of the respondents, pregnancy history, fertility preferences, and a detailed history of contraceptive behaviour. It also included a Family Planning Attitude Scale (FPAS) comprising of 22 items which were addressed to measure the behavioural component of the attitude system. The scale yielded a high reliability coefficient (r=0.85) as per the split-half method. Since the items for the scale were drawn from the universe relating to family planning methods, the scale can be said to have content validity. In addition, a Personal Preference Schedule (PPS) which was developed on the basis of Edwards' Personal Preference Schedule (EPPS) and Tripathi's Personal Preference Schedule (TPPS)[11] was utilised to measure the personality characteristics of the respondents.

Results

In the present paper, contraceptive initiation has been defined in terms of early and late acceptance. An early acceptor is one who has used any family planning method prior to the second pregnancy whereas a late acceptor is one who has used a method after the second pregnancy. The analysis has been restricted to current users who were first-time acceptors. This has been done in view of the conceptual framework which considers attitudinal and perceptual variables as important predictors of the timing of acceptance. Since these variables are time and context specific and are likely to modify or change over a period of time, it would not have been possible to obtain reliable information about them from past acceptors. It was found that among the total current users, 191 respondents were first-time acceptors. Of the current first-time acceptors, 51 (26.7 per cent) were early acceptors and 140 (73.3 per cent) were late acceptors.

TABLE 1
Background characteristics of early and late acceptors

Characteristics	Early acceptors (N = 51)	Late acceptors (N = 140)	Significance value
Average number of years of schooling of wife			
Mean	13.73	7.24	Z = 10.91*
S.D.	(2.86)	(5.19)	
Average age at marriage of wife (years)			
Mean	21.80	17.49	Z = 7.88*
S.D.	(2.99)	(4.16)	
Percentage			
ST/ST	13.7	32.9	
OBC	25.5	30.0	X = 10*
FC	60.8	37.1	
Percentage with income			
Up to Rs.2000	21.6	39.3	
Rs. 2001-3000	35.3	32.1	X = 12.66*
Rs. 3001+	43.1	21.4	

SC/ST = Scheduled Caste/Scheduled Tribe; OBC = Other Backward Caste; FC = Forward Caste.
* = Values significant at 0.01 level.

It is evident from Table 1 that early and late acceptors are different from each other in terms of their background characteristics. Early acceptors had attained a higher level of education (Z = 10.91; p > 0.01 level) as compared to late acceptors, and had a higher average age at marriage (Z = 7.88; p > 0.01). A large proportion of the early acceptors (60.8 per cent) as compared to late acceptors (37.1 per cent) were Hindu and belonged to the high income group.

TABLE 2
Attitudinal and perceptual characteristics of early and late acceptors

Characteristics	Early acceptors (N - 51)	Late acceptors (N - 140)	Significance value
% couples reporting interspousal communication	100.00	76.4	X - 12.66*
Ideal family size			
Mean	1.67	2.13	Z - -6.02*
S.D.	(0.48)	(0.43)	
Average number of F.P. methods known			
Mean	5.53	4.40	Z - 6.99*
S.D.	(0.54)	(1.69)	
Average Attitude Score			
Mean	94.84	90.63	Z - 3.09*
S.D.	(7.95)	(9.26)	

* - Values significant at 0.01 level.

Table 2 compares the attitudinal and perceptual characteristics of early and late acceptors. It suggests greater interspousal communication with respect to family planning among early acceptors as compared to late acceptors. Also, on average, the former showed a preference for small family size ideals, knew a greater number of contraceptive methods, and held a more favourable attitude to family planning than the latter.

The means and standard deviations (SD) for the various personality variables of early and late acceptors are presented in Table 3. On the basis of the t-test computed to establish the initial differences between early and late acceptors on seven personality variables, it was found that the two groups differed significantly only in the case of two personality dimensions i.e. n-Order and n-Aggression.

TABLE 3
Personality characteristics of early and late acceptors

Characteristic	Early acceptors Mean (S.D.) (N - 51)	Late acceptors Mean (S.D.) (N - 140)	Z Score
Need Achievement (n-Ach)	5.96 (1.81)	5.52 (1.67)	0.52
Need Order (n-Ord)	6.86 (2.12)	5.65 (1.90)	3.58
Need Autonomy (n-Aut)	5.96 (1.78)	6.47 (2.09)	- 1.66
Need Endurance (n-End)	6.78 (2.27)	6.89 (2.09)	- 0.30
Need Nurturance (n-Nurt)	7.24 (2.14)	6.47 (2.40)	- 0.53
Need Achievement (n-Ach)	6.20 (1.72)	6.03 (1.96)	0.58
Need Agression (n-Aggr)	3.28 (1.72)	4.17 (1.99)	- 3.37*

* - Values significant at 0.01 level.

Both these variables were related to the time of contraceptive acceptance, in the expected direction. It may be seen that although other personality variables such as need for achievement, need for nurturance, and need for change were not statistically related to the time of acceptance, they followed the expected direction of relationship. On the other hand, the two variables that is, the need for autonomy and the need for endurance did not exhibit the expected relationship with the time of acceptance.

Discriminant analysis

The findings presented hitherto were based on a bivariate analysis. However, the decision to accept a contraceptive method at a particular time during the course of reproductive life is influenced by a combination of factors which operate simultaneously. While some variables may appear insignificant when they are considered alone, others may, however, become significant in the presence of other variables. Therefore, it was thought appropriate to employ discriminant analysis to find out the important variables which discriminate between the early and late adoption of family planning methods.

All the 15 variables relating to the acceptors' background, attitudinal, perceptual and personality were considered in the analysis to pin-point important variables discriminating between the early and late acceptance. A stepwise selection procedure was employed using Wilk's criteria. The variable which minimised Wilk's lambda was selected in each step[12,13]. The stepwise discriminant analysis picked up seven of the 15 variables. The eigen value of the function was found to be 0.6984 and the function produced a canonical correlation coefficient of 0.6413 (Table 4). This indicated a fairly good relationship between the groups and discriminant function. The function had a Wilke's lambda of 0.5887 which was found to be highly significant statistically (0.01 level).

TABLE 4

Standardised canonical discriminant function coefficient of variables selected in stepwise discriminant analysis

Variable	Coefficient
WEDU	0.5656
IFS	-0.4845
INC	-0.3109
n-ORD	0.2690
FPKNO	0.2605
WMARR	0.2156
n-ACH	0.1778

Wilke's lambda = 0.5887
Eigen value = 0.6984
Canonical correlation = 0.6413

Table 4 presents the standardised discriminant function coefficients of the variables entered in the equation. The variables which turned out to be important in discriminating between early and late acceptors included three background variables—education of the respondent, monthly income of the couple, and age at marriage of the respondent; two attitudinal variables—ideal family size and level of knowledge about family planning methods; and two personality variables—the need for achievement and the need for order.

The educational level of the respondent (WEDU) emerged as the most important discriminant variable (0.5656) followed by preference for family size ideal (IFS = 0.4845), income (INC = -0.3109), need for order (nORD = 0.2690), level of family planning knowledge (FPKNO = 0.2605), respondent's age at marriage (WMARR = 0.2156), and need for achievement (nACH = 0.1778). All the variables except income showed the expected relationship with the time of contraceptive acceptance.

TABLE 5

Classification results

Actual Group	No. of cases	Predicted Group	
		1	2
Group 1			
Late acceptors	140	106	34
	(75.7)	(24.3)	
Group 2			
Early acceptors	51	3	48
	(5.9)	(94.1)	

Cases correctly classified = 80.63%

The results of the classification of the discriminant analysis shown in Table 5 are an indicator of the efficiency of the discriminant function. A good function with better discrimination variables will have minimum misclassification errors. It was found that using the selected seven discriminating variables, 80.6 per cent of the cases could be correctly classified. In order to elucidate the exact contribution of each of these predictors on the time of acceptance it was thought appropriate to use Multiple Classification Analysis (MCA)[14].

Multiple Classification Analysis (MCA)

MCA was carried out for marital duration. Prior to this, the interactions among independent variables were checked using analysis of variance (ANOVA). None of the interactions were found significant. The MCA results indicated that the educational level of the respondent (WEDU), preference for family size ideal (IFS), level of family planning knowledge (FPKNO), and respondent's age at marriage (WMARR) had a significant effect on the dependent variable.

These results indicate that about 52 per cent of the variance in the initiation of contraception is by all the variables together (Table 6). The grand mean was found to be 0.27. The gross effect of the educational level of the respondent was maximum (0.50), followed by the respondent's age at marriage (0.48), family size ideal (0.45), income (0.26), level of family planning knowledge (0.26), need for achievement (0.11), and need for order (0.09).

It is important to note that the gross effect of the respondent's educational level (WEDU), which was the highest (eta = 0.50), was lowered by almost one-third (beta = 0.16) when the effect of covariates and other variables were controlled. On the other hand, the effect of family size ideals (IFS) did not decline as much as the educational level, rather it emerged as having the highest independent contribution in explaining the variance in the timing of acceptance (eta = 0.45; beta = 0.31). Thereafter, changes in the eta-values of the level of family planning knowledge (FPKNO) and respondent's age at marriage (WMARR) were much less as compared to the change in the eta value of WEDU.

Discussion

A close examination of the MCA results reveals that the perception of the family size ideal had a substantial effect on the decision to initiate contraception. It showed that 65 per cent of those respondents who preferred a one-child family were early acceptors. It is possible that women with a preference for a small family would also prefer to end their childbearing process early and therefore, start contraception earlier than those who have larger family size ideals. At the same time, these women are likely to be conscious of the health of their children "as they have planned for fewer children" and therefore tend to space the births. This explains the acceptance of spacing methods in the early stages. Bulatao[15] has reported similar findings among Filipino women; women who initiated early contraceptive use were those who showed a preference for small ideal family sizes.

The relationship between age at marriage, which emerged as a second important variable, and the initiation of contraception indicated that a higher proportion of those of who married late went for early family planning acceptance. It can be seen that 38 per cent of those who married at the age of 24 years or above had accepted contraception before their second pregnancy as against those who had married before 24 years of age. Marriage in the Indian context is linked with the larger issues of the value system, where early marriages are still prevalent and signify a woman's primary role in terms of home-making[16,17]. Women who marry late have a relatively smaller reproductive span during which they have to complete their childbearing. Therefore, it is likely that women marrying late possess a modern outlook towards life and so may have started to contracept earlier in order to complete the process of childbearing.

Women's education was found to have a

strong association with the initiation of contraception. The higher the level of education, the earlier was the adoption of contraception. Education facilitates rational thinking of individuals in terms of a planned family. Hence, more educated people may make appropriate fertility decisions well in advance in the course of their marital life and tend to go for early contraceptive adoption. This finding is in the expected direction; the association between education and timing of acceptance has also been reported earlier[18,19] where early acceptors of family planning were found to be better educated as compared to late acceptors. Similarly, a positive association of education and early initiation of contraceptive use has been reported among Filipino women[15].

Knowledge of family planning methods was also found to have a substantial impact on contraceptive initiation. Respondents possessing higher knowledge of family planning methods were more likely to acquire correct knowledge. This would enable them to try different temporary methods. In addition, the tendency to acquire more knowledge is expected to be associated with the desire to space children and small family size preferences. For both these reasons, women with higher knowledge about family planning methods tend to use contraceptives earlier than those who have less knowledge.

The couple's income, and need for order and for achievement had a moderate to low impact on the time of contraceptive acceptance. This finding is consistent with that of earlier researchers[20].

From the point of policy implications, the findings suggest that in order to have any perceptible impact on family planning behaviour, it is essential to bring about changes in family size ideals, improve contraceptive knowledge, and increase the age at marriage. In fact, it can be said that changing these dimensions is more crucial and immediate in terms of their impact on contraceptive behaviour than enhancing the level of education per se. In other words, improvements in education will yield a desirable result if it is accompanied by concurrent changes in the value system and contraceptive knowledge status. For this purpose, the programme will have to depend heavily on communication efforts, both mass media and interpersonal.

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Childbirth practices among women in slum areas

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Introduction

Childbirth is a normal physiological process which can become pathological due to the adoption of certain practices and consequently affect the health and survival of the newborn. Good pre and postnatal care and trained assistance at the time of childbirth are thus very important to ensure child survival. In the present study an attempt has been made to examine the pattern and role of practices related to childbirth in some urban ICDS (Integrated Child Development Scheme) areas of Allahabad.

Methodology

The study was undertaken in the Anganwadi centres of the urban ICDS project areas in Allahabad. Thirty five centres were chosen randomly out of a total of hundred centres. Each centre caters to an approximate population of one thousand. All the pregnant women registered at the selected Anganwadi centres during the course of one year formed the study population. In all, there were 661 women.

Each Anganwadi centre was visited on a fixed date every month. The mothers registered at the centre during each month of the study period were interviewed and the information was recorded on a pretested schedule. It included a detailed history of past illness including obstetric problems, a family history of disease, tetanus toxoid immunisation during the antenatal period, and childbirth practices including the type of instruments used at the time of delivery.

Results

All the 661 women were permanent residents of the area and had an almost homogenous socio-economic status. They belonged to the lower socio-economic group (by Kuppuswamy's classification), with an

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average monthly per capita income was Rs. 102.50. As many as 92.4 per cent were Hindu, and the remaining were Muslim. The majority were illiterate (82 percent); a mere 6 per cent were educated above the primary level. Their husbands were better educated—36 per cent had studied beyond high school and 30 per cent upto junior high school; only 34 per cent were illiterate.

Immunisation status

The two prescribed doses of tetanus toxoid were received by about two-fifths (40.1 per cent) of the women either from an ANM or a doctor. More primiparas (55.3 per cent) as compared to second and third paras (43.3 per cent) and grand multiparas (27.4 per cent) had been immunised; the latter group being least protected against tetanus. Seventy per cent of the women had received at least one dose of the vaccine during pregnancy.

Place of delivery and assistance at birth

Almost two-fifths (59.8 per cent) of the women had delivered at home while the remaining (40.2 per cent) had had their babies delivered at Government or private hospitals (Table 1). The majority of the births (68.8 per cent) were conducted by untrained personnel, with slightly less than a third (31.2 per cent) being attended by ANMs or doctors.

On average, one untrained birth attendant catered to the population of each Anganwadi centre that is, to approximately 1000 people, and attended the delivery of over half ((55.2 per cent) of the women (Table 1). While family members provided birth assistance in over a tenth of the cases (13.6 per cent), the ANM or auxiliary nurse midwife and the doctor were almost equally preferred among trained personnel (14.5 and 16.6 per cent respectively).

Parity wise, among those who had utilised the services of trained persons for delivery, by and large, the doctor had delivered primiparas (43/62 or 69.3 per cent) while the ANM had been utilised largely by the multiparas (59/102 or 57.8 per cent) (Table 1). The services of the untrained dai however, had been most utilised irrespective of parity.

Husband's literacy status and natal care

Awareness of immunisation of the pregnant woman and the need for trained birth assistance was greater among educated husbands (Table 2). Thus, well over half (56.3 per cent) of the husbands who had had high school education and above preferred the services of medical personnel while only 10.2 per cent of those who were illiterate did so. The latter preferred the services of

TABLE 1

Distribution of women by person attending childbirth and parity

Parity	Trained personnnel		Untrained persns		Total
	ANM	Doctor	Family member	Dai	
1	19(12.7)	43(28.7)	20(13.3)	68(45.3)	150(100.0)
2-3	18(4.8)	24(9.0)	40(14.9)	186(71.3)	268(100.0)
4 +	59(24.3)	43(17.7)	30(12.3)	111(45.7)	243(100.0)
Total	96(14.6)	110(16.6)	90(13.6)	365(55.2)	661(100.0)

The percentages have been calculated on row totals and are given in brackets.
X2 - 66.28 df - 2 p<0.001

family members or untrained dais (89.8 per cent). Similarly, almost two-fifths (59.2 per cent) of the women whose husbands had been educated up to or beyond the high school level, had received tetanus toxoid immunisation as compared to those whose husbands were illiterate (19.1 per cent). None of these findings, however, were significant.

TABLE 2

Distribution of women by person attending childbirth and husband's education

Education of husband	Person attending chilbirth				Total
	ANM	Doctor	Family member	Dai	
Illiterate	15(6.7)	8(3.5)	22(9.8)	180(80.0)	225(100.0)
Primary	18(2.3)	3(3.9)	15(19.5)	41(74.3)	77(100.0)
Junior high school	12(9.9)	16(13.2)	10(8 3)	83(68.6)	121(100.0)
High school & above	51(21.4)	83(34.9)	43(18.1)	61(25.6)	238(100.0)
Total	96(14.5)	110(16.7)	90(13.6)	365(55.2)	661(100.0)

The percentages have been calculated on row totals and are given in brackets.

Childbirth

Proper aseptic precautions for delivery were taken by all the trained medical personnel. Among the untrained dais, none used a sterilised scissors. The blade was sterilised only in a fifth of the deliveries; in the remaining—over four-fifths (81.9 per cent) of the cases, an unsterilised blade was used. The use of a sterilised blade was more common when the untrained birth attendant was a family member (35.6 per cent). Boiling of the thread used for tying the umbilical cord was not practiced either by the dais or the family members, whereas all the doctors and majority of the ANMs (95.8 per cent) used sterilised thread.

The use of gentian violet and Neosporin powder on the cord was followed by medical personnel. The untrained dais usually used mustard oil (59.7 per cent) or hot ash (30.9 per cent) on the cord. Among the deliveries conducted by family members, 80 per cent applied mustard oil on the cord; cow dung was also used to a greater extent by family members.

Complications

Two hundred and six (31.2 per cent) of the deliveries were conducted by trained personnel, among which 13 perinatal deaths occurred. Thus, the perinatal mortality rate worked out to 67.4 per 1000 live births. On the other hand, the untrained persons (dais and family members) conducted 455 deliveries (68.8 per cent) and 61 perinatal deaths occurred giving a perinatal mortality rate of 154.8 per 1000 live births.

Twenty five still births occurred among the deliveries conducted by untrained persons and birth asphyxia was the main cause of death (accounting for 52 per cent). In sharp contrast, only eight still births occurred among the deliveries conducted by trained personnel. Here too, birth asphyxia was the leading cause of mortality, but occurred to a much lesser extent (37.5 per cent), while hand prolapse (5 cases) and rupture of the uterus (2 cases) were responsible in the other cases. In 10 cases the exact cause of death could not be ascertained.

In all, 36 neonatal deaths occurred among the deliveries conducted by untrained personnel, against five in those conducted by trained personnel. The causes of neonatal death were low birth weight (14 cases), tetanus neonatorum (6 cases), septicaemia (3 cases), neonatal jaundice (4 cases), congenital anomalies (3 cases) and uncertain causes (11 cases). It is notable that deaths due to tetanus neonatorum occurred only among deliveries conducted by untrained personnel.

Discussion

Delivery is a normal and natural phenomenon for a woman but one which cannot be left unattended by health personnel. However, this does happen in urban slums where no organised MCH services exist. The services available elsewhere are not utilised either because they are not affordable or because they are considered unnecessary especially by the illiterate. As a result, more than 50 per cent of the deliveries are conducted by untrained persons thereby posing a potential hazard to the health of the mother and the child.

According to UNICEF[1], only 33 per cent of all births in India are attended by trained birth attendants or medical personnel. The results of this study confirm this statement—only 31 per cent of the deliveries had been assisted by an ANM or a doctor and, that these services had been utilised largely by primiparas or multiparas (4+). Women undergoing their second or third delivery utilised their services the least. Similar observations have been reported by Joshi et al[2] and Agarwal et al[3]. The association between parity and type of personnel was found to be statistically significant (Table 1).

These observations may be explained by the fact that complications occur more frequently in primiparas and multiparas (4+). As a result, a larger proportion of such women avail of the services of the ANM or doctor in anticipation of possible complications or are forced to seek help from trained medical personnel for complications arising during delivery.

The majority of the slum dwellers had no faith in hospitals. They preferred and trusted the untrained dai who belonged to the same socio-cultural milieu. They also utilised her services in order to conform to tradition and custom. And this, despite the fact that the untrained birth attendants did not observe aseptic precautions for delivery or cord cutting. The application of mustard oil on the cord stump often led to infection and was responsible for the ill health of the newborn, while tetanus neonatorum could be directly attributed to the practice of applying cow dung on the cord stump. These practices are entirely due to ignorance, illiteracy and lack of education of the dais as well as family members.

The complications occurring during delivery clearly show the unhygienic practices and the inability to identify 'high risk' mothers by the untrained personnel resulting in perinatal deaths which could have been avoided by adequate training.

The results indicate that untrained dais have an extremely important role to play in the provision of natal care in urban slums. To make natal care services both acceptable and safe for mothers living in slums and for their newborn, it is essential to train the dais to use hygienic childbirth practices, to promote tetanus immunisation, and to recognise 'high risk' mothers and other preventable causes of death like prolonged labour. This can be done through orientation programmes and practical demonstrations. It is worthwhile pointing out here that it is these untrained birth attendants, rather than the ANMs, who require regular orientation and training, as it is they who are sought and trusted by the women (and their husbands) who live in slums and who are most in need of MCH services.

Summary

Six hundred sixty one women were interviewed from 35 randomly chosen Anganwadis in the urban ICDS project at Allahabad, about various natal practices. The women belonged to a similar low socioeconomic status and were mostly illiterate. They preferred the services of the local untrained dai for delivery inspite of the fact that most of the dais did not follow aseptic precautions for delivery and cord cutting. It is suggested that to improve the natal care services within the framework of acceptability, local dais should be trained in hygienic childbirth practices and identification of 'high risk' mothers so that preventable neonatal deaths do not occur.

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Environmental correlates of child morbidity in Andhra Pradesh

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Introduction

The subject of child morbidity is rarely touched by demographers and planners but not by the medical community. In fact, the morbidity of infants and children results in mortality causing untold misery to parents at the family level, and the depletion of resources at the national level. Research conducted by medical professionals is hospital-based, not community-based. This paper attempts the latter approach—to study the determinants of infant and child morbidity, in particular, certain environmental variables.

The reduction of disease is probably initiated and sustained by environmental factors which are closely linked to sanitation and food supply[1]. Inadequate knowledge of hygiene and sanitation makes both the mother and child extremely vulnerable to many infections[2]. Poor quality of housing, lack of environmental sanitation and low levels of immunity affect mortality to a great extent[3]. To understand the possible influence of environmental factors on infant and child morbidity, a draught-prone area and a highly irrigated and agriculturally developed area were studied using variables such as the type of house, crowding, the presence or absence of a chimney in the kitchen, source of water, storage of drinking water, disposal of waste water and garbage, personal hygiene, sanitation, and kitchen hygiene, the latter three being expressed in terms of indices.

Sample and Methodology

As mentioned earlier, the sample was drawn from two regions namely, a draught-prone area and an agriculturally developed area by multi-stage simple random sampling. It consisted of 800 mothers between the age of 25-45 years, with at least one child under five. Half of the mothers were drawn from nine randomly selected villages in the draught-prone Piler mandalam of Chittoor district, and the other half from seven randomly selected villages of the agriculturally developed Allur mandalam of Nellore district, both in Andhra Pradesh state. A 'mandalam' is the smallest administrative unit consisting of a population of 30,000-40,000.

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The morbidity status of 0-5 year-old children of the mothers was collected retrospectively for six months from the day of interview. Based on the duration and severity of the illness, the illnesses were classified as short-term and somewhat long-term illnesses. The former were gastro-intestinal diseases like diarrhoea and respiratory infections lasting for 1-4 days, while the latter were of the nature of pyrogenic meningitis, meningitis, convulsions, and nutritional deficiencies like marasmus and kwashiorkar.

Results and Discussion

Table 1 presents a distribution of the respondents by the cause of morbidity among their children. It indicates that about 57 per cent of the mothers in Piler reported various illnesses among their children as compared to 52 per cent of those in Allur. While gastro-intestinal disorders were most frequently observed in both samples to a more or less equal extent, Allur children were more likely to suffer from respiratory disorders as compared to their Piler counterparts (Allur: 10.5 per cent; Piler: 5.3 per cent) while Piler children were more likely to suffer from diseases related to nutritional deficiency (Piler: 12.5 per cent; Allur: 3.0 percent). The findings in terms of the short and long-term illnesses prevalent among children under five in relation to the various environmental variables in the Piler and Allur samples are described in the paragraphs which follow.

TABLE 1

Percentage distribution of respondents by cause of child morbidity

Cause of morbidity	Piler	Allur	Total
No morbidity	42.7 (171)	48.3 (193)	45.5 (364)
Gastro-intestinal disorders	30.2 (121)	33.2 (133)	31.7 (254)
Respiratory disorders	5.3 (21)	10.5 (42)	7.9 (63)
Nutritional deficiency diseases	12.5 (50)	3.0 (12)	7.8 (62)
Central nervous system disorders	2.5 (10)	2.0 (8)	2.3 (18)
Infectious diseases	6.8 (27)	3.0 (12)	4.9 (39)
Total	100.0 (400)	100.0 (400)	100.0 (400)

House type

While about three-fifths (60 per cent) of the mothers in both Piler and Allur lived in huts, more Piler mothers (40.5 per cent) than Allur mothers (28.3 per cent) lived in pucca or permanent structures (stone being available in abundance in the rocky Piler region, stone slabs provide inexpensive construction material as compared to concrete). Despite being agriculturally well developed, Allur residents were unable to afford pucca houses, and unlike in Piler, as their houses were small, about 67 per cent stored their agricultural produce in separate granaries.

In Allur, the type of house was found to be an important determinant in influencing the incidence of morbidity among under-fives in that almost 66 per cent of the children living in huts had suffered from various illnesses as compared to those who lived in pucca houses (43 per cent) (Table 2, Panel A).

However in Piler, children from huts and pucca houses alike showed an equal incidence of child morbidity. Several studies have supported this observation; for example, asthma has been observed to be associated with the type of housing and over-crowding. Rao[3] has reported that poor quality of housing, lack of environmental sanitation and low levels of immunity affect child morbidity to a great extent.

Crowding

As the number of persons living in a room increases, the incidence of morbidity obviously increases due to the transfer of

TABLE 2

Percent distribution of respondents by type of house, persons per room, and presence of a chimney in relation to child morbidity

	Piler			Allur			All		
	NM	M	Total	NM	M	Total	NM	M	Total
A. *Type of house*									
Hut	46.8	63.2	100.0	44.2	65.8	100.0	45.4	54.6	100.0
	(101)	(115)	(216)	(119)	(150)	(269)	(220)	(265)	(485)
Kuccha	36.4	63.6	100.0	50.0	50.0	100.0	42.5	57.5	100.0
	(80)	(14)	(22)	(9)	(9)	(18)	(17)	(23)	(40)
Pucca	38.4	61.7	100.0	57.0	43.0	100.0	46.2	53.8	100.0
	(62)	(100)	(162)	(65)	(48)	(13)	(127)	(148)	(275)
Total	42.8	57.3	100.0	48.3	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)
B. *Persons per room*									
1	58.8	41.2	100	69.2	30.8	100.0	62.3	37.7	100.0
	(30)	(21)	(51)	(18)	(8)	(26)	(48)	(29)	(77)
2	56.8	43.2	100.0	43.3	56.7	100.0	51.3	48.6	100.0
	(25)	(9)	(44)	(13)	(17)	(30)	(38)	(36)	(74)
3	34.2	65.3	100.0	52.1	47.9	100.0	42.9	57.1	100.0
	(26)	(50)	(76)	(38)	(35)	(73)	(64)	(85)	(149)
4	40.4	59.6	100.0	49.5	50.5	100.0	45.0	55.0	100.0
	(42)	(62)	(104)	(53)	(54)	(107)	(95)	(116)	(211)
5	38.4	61.6	100.0	43.3	56.7	100.0	41.2	58.8	100.0
	(48)	(77)	(125)	(71)	(93)	(164)	(119)	(170)	(289)
Total	42.8	51.2	100.0	48.2	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)
C. *Presence of chimney*									
Nil	38.6	61.4	100.0	47.8	52.2	100.0	43.2	56.8	100.0
	(115)	(183)	(298)	(142)	(155)	(297)	(257)	(338)	(595)
Door & open	56.9	43.1	100.0	37.3	62.7	100.0	48.1	51.9	100.0
window	(41)	(31)	(72)	(22)	(37)	(59)	(63)	(68)	(131)
Yes	50.0	50.0	100.0	65.9	34.1	100.0	59.5	40.5	100.0
	(15)	(15)	(30)	(29)	(15)	(44)	(44)	(30)	(74)
Total	42.8	57.3	100.0	48.3	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)

NM - No morbidity; M - Morbidity

Correlation coefficients: Piler: 0.121; Allur: - 0.067; mothers below 25 years: - 0.58; mothers above 25 years: - 0.166

disease agents from person to person. For example, Gour[4] has observed that overcrowded localities are responsible for the spread of diarrhoeal infections. We observed a linear positive association between the number of persons living in a room and the incidence of child morbidity in both samples (Table 2, Panel B). However, in Allur, it showed an increase from 30.8 per cent to 56.7 per cent even with two occupants per room. The rate of child morbidity was consistently lower at all levels in Allur than in Piler. One reason for this could be that, being agricultural workers, most people leave for work early in the morning and return only in the late evening, and later, the houses being small, usually sleep outside the house, thus avoiding overcrowding.

Presence of a chimney in the kitchen

The presence or absence of a chimney in the kitchen influences the health status of its members, particularly in relation to disorders of the respiratory tract. We observed a low incidence of morbidity among children from households which had a chimney in the kitchen (Table 2, Panel C). Thus, 64.4 per cent of the mothers of children in Piler and 52.2 per cent in Allur who came from houses which did not have a chimney in the kitchen reported that their children suffered from various short-term and chronic illnesses as compared to those living in houses with chimneys (Piler: 50 per cent; Allur: 34.1 per cent).

The Andhra Pradesh government has provided chimney pipes for each house, for the convenience of people living in huts and kuccha houses, under the Integrated Rural Development Programme (IRDP). However, this scheme has not been well implemented throughout the state. In Piler, people were aware about the scheme and were availing of it whereas in Allur they were ignorant about it and rarely utilised it. Smoke released from firewood contains a number of injurious gases such as carbon monoxide which are associated with lung problems. Further, partly dried fire-wood mixed with cow-dung cakes releases smoke which irritates the eyes and affects the lungs. The absence of chimneys aggravate the situation by filling the house with smoke and gas. Therefore, twice as many children in Piler (10.5 per cent) were found to have suffered from respiratory infections such as bronchitis, broncho-pneumonia, whooping cough and diphtheria compared to children in Allur (5.3 per cent) (Table 1).

Source of water

The source from which water for drinking and for other use is obtained and the method of storing water is yet another dimension of environmental sanitation which determines child morbidity. Further, the decline of diseases has been linked to sanitation and food supply[1]. Episodes of diarrhoea and infection of the respiratory tract, as well as malaria, occur partially due to contaminated water supply[5-7].

The inhabitants of Piler and Allur fetched water from four sources for drinking and for general use: a running source such as a canal (as in Allur), open wells, hand-pump/bore wells (found mostly in Piler), and stored water (pumped from wells into overhead reservoirs which are supposed to be cleaned every six months), mostly found in Allur.

When the inter-relationship between the source of water and the incidence of morbidity among under-fives was studied, a high incidence of child morbidity was expressed by Piler mothers (75 per cent) who reported the use of stored water, probably due to the poor maintenance of reservoirs (which are cleaned rarely or never), and Allur mothers (62.8 per cent) who used water from open wells (Table 3, Panel A) (which have no cement basins around them and consequently gather dust and microorganisms grow rapidly in it). Thus, the use of contaminated water from these sources was reflected in the incidence of child morbidity, particularly gastro-intestinal disorders like diarrhoea, dysentery, gastroenteritis and jaundice as observed in Table 1 (Allur: 33.2 per cent; Piler 30.2 per cent).

Use of covered drinking water

The use of lids on drinking water containers is very essential for protecting water from dust and contamination. Food cooked with contaminated water leads to diarrhoeal diseases among infants and children[8, 9]. Most mothers (74 per cent) in Piler reported that they did not cover the water container

TABLE 3
Percent distribution of respondents by source of drinking water and use of covered water container in relation to child morbidity

	Piler			Allur			All		
	NM	M	Total	NM	M	Total	NM	M	Total
A. *Source of water*									
Running source	50.0	50.0	100.0	51.6	48.4	100.0	51.5	48.5	100.0
	(1)	(1)	(2)	(16)	(15)	(31)	(17)	(16)	(33)
Deep well	48.6	51.4	100.0	37.2	62.8	100.0	41.6	58.4	100.0
	(35)	(37)	(72)	(42)	(71)	(113)	(77)	(108)	(185)
Bore well	43.4	56.6	100.0	60.7	39.3	100.0	45.0	55.0	100.0
	(126)	(164)	(290)	(17)	(11)	(28)	(143)	(175)	(318)
Stored water	25.0	75.0	100.0	51.8	48.2	100.0	48.1	51.9	100.0
	(9)	(27)	(36)	(118)	(110)	(228)	(127)	(137)	(264)
Total	42.8	57.3	100.0	48.3	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)
B. *Drinking water container*									
Covered	41.3	58.6	100.0	37.5	62.5	100.0	40.1	59.9	100.0
	(122)	(173)	(295)	(57)	(95)	(152)	(179)	(268)	(447)
Not covered	46.7	53.3	100.0	54.8	45.2	100.0	52.4	47.6	100.0
	(49)	(56)	(105)	(136)	(112)	(248	(185)	(168)	(353)
Total	42.8	52.3	100.0	48.3	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)

NM - No morbidity M - Morbidity
Correlation co-efficients: Piler: 0.104; Allur: 0.086; mothers below 25 years: 0.017; mothers above 25 years: -0.059.

with a lid as compared to mothers in Allur (62 per cent) (Table 3, Panel B). As the majority of the respondents lived in huts with thatched roofs, dust and pieces of dried leaves used for the roof tend to fall on uncovered food and water and contaminate them. Hence, mothers who did not cover food and water containers (Piler: 58.6 per cent and Allur: 62.5 per cent) in the study areas reported a higher incidence of morbidity among children under five.

Disposal of waste water

Episodes of sickness among children aged 0-5 years were more frequent whose housing conditions were poor as compared to those who lived in good houses[10, 11] which had proper facilities for the disposal of waste water and other solid waste. In rural areas, drainage facilities are not usually available and most people leave the waste water to accumulate around their houses. In the present study also, a majority of mothers allowed used water to stagnate around their houses (Piler: 98 per cent, Allur: 89 per cent) (Table 4). When the disposal of waste water was correlated with the incidence of child morbidity, a high incidence of morbidity was observed (Piler: 56.8 per cent; Allur: 52.7 per cent).

Stagnant water is the main source or breeding place of insects, particularly mosquitoes and flies, which cause communicable diseases of gastro-intestinal origin which are largely responsible for ill-

TABLE 4
Percent distribution of respondents by mode of disposing waste water and garbage in relation to child morbidity

	Piler			Allur			All		
	NM	M	Total	NM	M	Total	NM	M	Total
A. *Disposal of waste water*									
Stagnation	43.2 (169)	56.8 (222)	100.0 (391)	47.3 (168)	52.7 (187)	100.0 (355)	45.2 (337)	54.8 (409)	100.0 (746)
No stagnation	66.7 (6)	33.3 (3)	100.0 (9)	55.6 (25)	44.4 (20)	100.0 (45)	57.4 (31)	42.6 (23)	100.0 (54)
Total	42.8 (171)	57.3 (229)	100.0 (400)	48.3 (193)	51.7 (207)	100.0 (400)	45.5 (364)	54.5 (436)	100.0 (800)
B. *Disposal of waste*									
Within the compound	25.0 (3)	75.0 (9)	100.0 (12)	46.9 (127)	53.1 (144)	100.0 (271)	45.9 (130)	54.1 (153)	100.0 (283)
Outside the compound	43.3 (168)	56.7 (22)	100.0 (388)	51.2 (66)	48.8 (63)	100.0 (129)	45.3 (234)	54.7 (283)	100.0 (517)
Total	42.8 (171)	57.3 (229)	100.0 (400)	48.3 (193)	51.7 (207)	100.0 (400)	45.5 (364)	54.5 (436)	100.0 (800)

NM - No morbidity; M - Morbidity

nesses among children as seen earlier in Table 1 (Piler: 30.2 per cent; Allur: 33.2 per cent) and respiratory infections (Piler: 5.3 per cent; Allur: 10.5 per cent) (Tables 1 and 4).

Disposal of solid waste

Another environmental variable which was studied was the disposal of waste or garbage, usually organic matter which gets putrefied and causes respiratory problems.

TABLE 5
Percent distribution of respondents by personal hygiene in relation to child morbidity

Hygiene level	Piler			Allur			All		
	NM	M	Total	NM	M	Total	NM	M	Total
Poor	42.7 (73)	57.3 (98)	100.0 (171)	42.0 (94)	58.0 (130)	100.0 (224)	42.3 (167)	57.7 (228)	100.0 (395)
Moderate	37.1 (23)	62.9 (39)	100.0 (62)	61.3 (19)	38.7 (12)	100.0 (31)	45.2 (42)	54.8 (51)	100.0 (93)
Good	44.9 (75)	55.1 (92)	100.0 (167)	55.2 (80)	44.8 (65)	100.0 (145)	49.7 (155)	50.3 (157)	100.0 (312)
Total	42.8 (171)	57.3 (229)	100.0 (400)	48.3 (193)	51.7 (207)	100.0 (400)	45.5 (364)	54.5 (436)	100.0 (800)

NM - No morbidity; M - Morbidity
Correlation coefficients: Piler: -0.020; Allur: -0.128; mothers' age below 25 years: -0.023; mother's age above 25 years: -0.178.

FIGURE 1
Infant/child morbidity in relation to sanitation inex

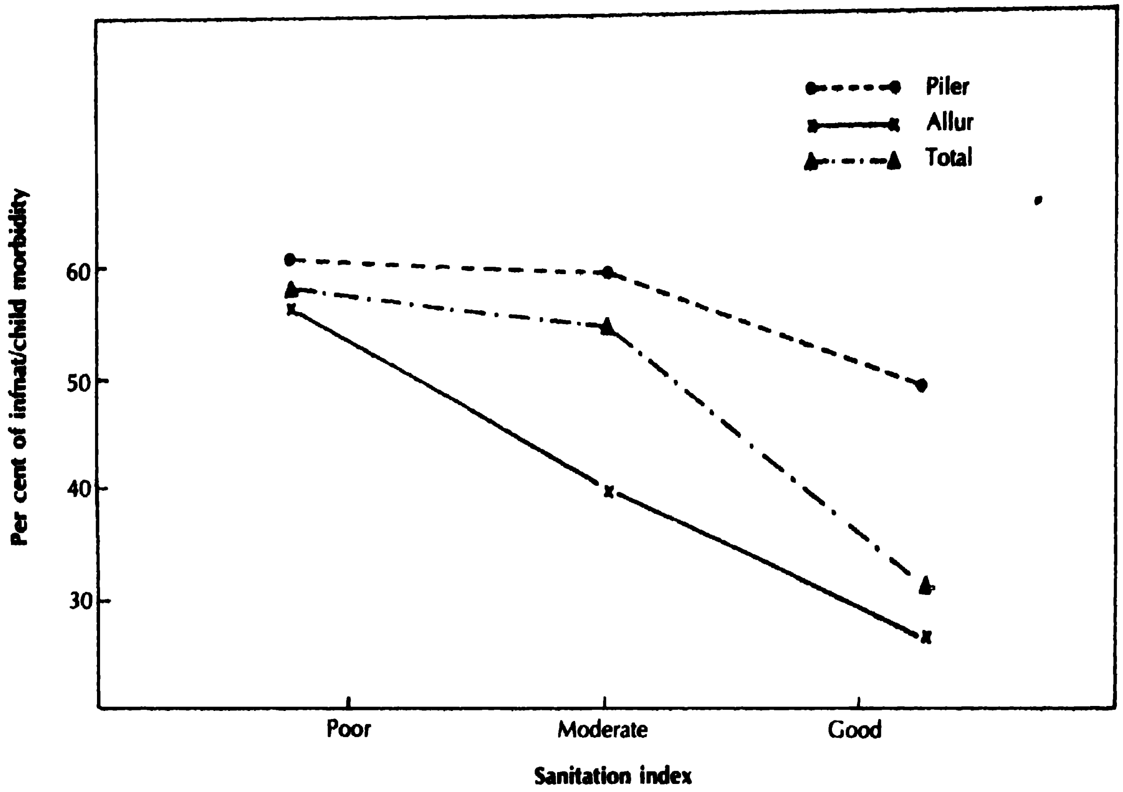
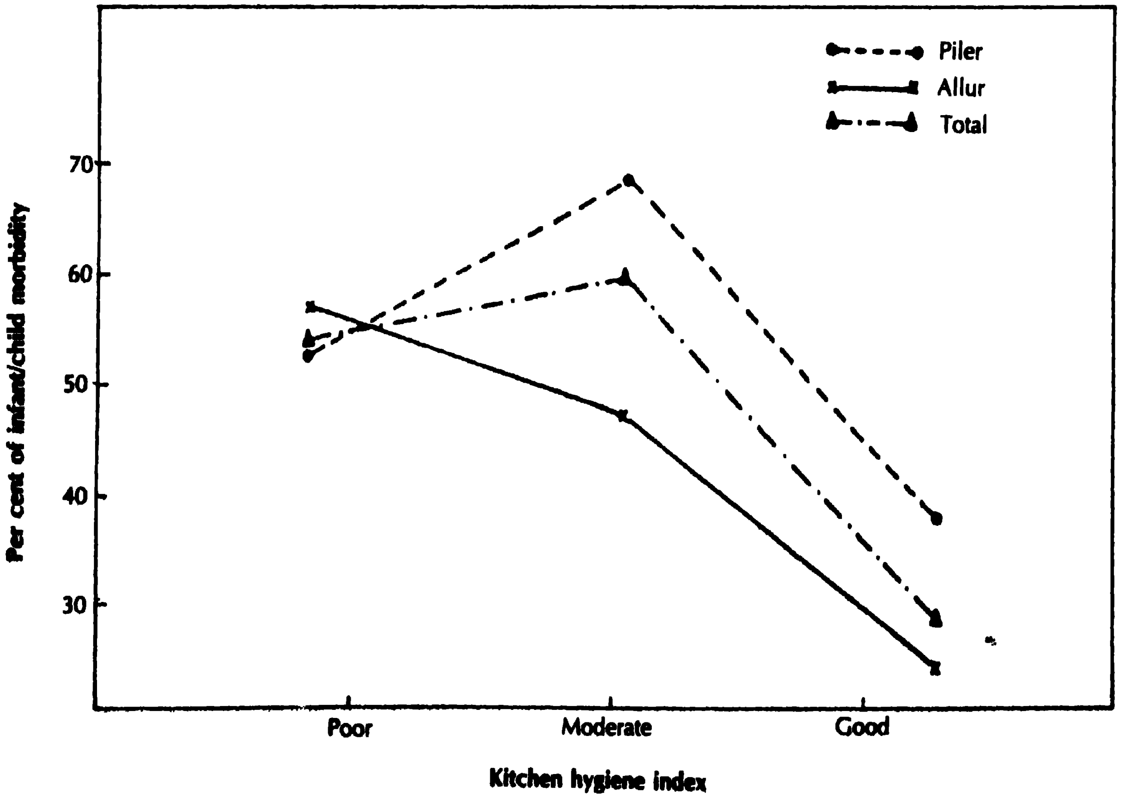


FIGURE 2
Infant/child morbidity in relation to kitchen hygeine index



Almost all (97 per cent) women in Piler disposed solid waste away from home whereas only a third (32.3 per cent) of Allur women did so; most of the Allur women (68 per cent) (67.7 per cent) threw it in the vicinity of their houses (Table 4, Panel B). The latter also kept cattle in a shed near the house. Thus, the waste was accumulated near the cattle shed. While children whose mothers disposed waste matter in the vicinity of the house were more likely to experience ill health than those whose mothers did so away from the house, in Piler morbidity episodes among children were high when both methods of waste disposal were practised.

Personal Hygiene Index

Yet another dimension considered under environmental sanitation was personal hygiene. The personal hygiene of mothers exerts a profound influence on the health of children. Usually, in rural areas, women are more occupied with household activities like cleaning the house, the cattle shed and surroundings which leave them little time to attend to their personal cleanliness. The personal hygiene index was computed using two variables, namely, cleanliness of the mother's hair and cleanliness of the clothes worn by her. The mothers were classified on this basis as having poor, moderate and good standards of personal hygiene (Table 5). Several studies[1,2,4] have shown that good personal hygiene practices of the mother reduce the incidence of infant and child morbidity. Infants/children who are breastfed by mothers whose personal hygiene is poor are prone to illnesses like diarrhoea and gastro-intestinal disorders.

We observed that mothers with moderate and poor levels of personal hygiene reported a higher incidence of child morbidity thereby confirming that children of mothers who practice good personal hygiene are less likely to have health problems. This was particularly noticeable in Allur where 58 per cent of the mothers who observed poor personal hygiene reported child illnesses as compared to 45 per cent who observed good personal hygiene.

Sanitation Index

The influence of environmental sanitation on child morbidity has been emphasised in several studies[1,7,11]. To observe the cumulative effect of environmental sanitation variables on child morbidity, an index was prepared based on the following four variables: ventilation in the house, cleanliness of the floor, disposal of waste water, and disposal of solid waste. Based on the cumulative scores, this index was structured as poor, moderate and good.

A high incidence of child morbidity was reported by mothers living in poor sanitary conditions in both the study areas, with slight variations (Table 6). In Piler, an equal proportion of children were reported to have suffered from various illnesses when the sanitation level was poor (57.8 per cent) or moderate (57.1 per cent). On the other hand, in Allur, child morbidity was observed to decrease when sanitary conditions were good. In the sample as a whole, a strong negative association was observed between the sanitation index and child morbidity in both the regions.

Kitchen Hygiene Index

This index was computed by using the following variables: the presence of a chimney in the kitchen, the use of covered drinking water, covering food, and cleanliness of utensils used in the kitchen. In addition to the other indices, the kitchen hygiene index was considered to be important because the kitchen is the place where the food is cooked, stored, served and eaten by the members of the household. Any unhygienic practice before, during and after the preparation of food therefore will cer-

TABLE 6

Percent distribution of respondents by sanitation and kitchen hygiene indices in relation to child morbidity

	Piler			Allur			All		
	NM	M	Total	NM	M	Total	NM	M	Total
A. *Sanitation Index*									
Poor	42.2	57.8	100.0	44.8	55.2	100.0	44.0	56.0	100.0
	(51)	(70)	(121)	(128)	(158)	(286)	(179)	(228)	(469)
Moderate	42.9	57.1	100.0	55.7	44.4	100.0	46.2	53.8	100.0
	(118)	(157)	(275)	(54)	(43)	(97)	(172)	(200)	(372)
Good	50.0	50.0	100.0	64.7	35.3	100.0	61.9	38.1	100.0
	(2)	(2)	(4)	(11)	(6)	(17)	(13)	(8)	(21)
Total	42.8	57.3	100.0	48.3	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)
B. *Kitchen Hygiene Index*									
Poor	47.5	52.5	100.0	44.4	55.6	100.0	45.8	54.2	100.0
	(96)	(106)	(202)	(111)	(139)	(250)	(207)	(245)	(452)
Moderate	36.3	63.7	100.0	51.3	49.7	100.0	42.0	58.0	100.0
	(66)	(116)	(182)	(58)	(55)	(113)	(124)	(171)	(295)
Good	56.3	43.7	100.0	64.9	35.1	100.0	62.3	37.7	100.0
	(9)	(7)	(16)	(24)	(13)	(37)	(33)	(20)	(53)
Total	42.8	57.3	100.0	48.3	51.7	100.0	45.5	54.5	100.0
	(171)	(229)	(400)	(193)	(207)	(400)	(364)	(436)	(800)

NM - No morbidity; M - Morbidity

Correlation Co-efficients: Piler : -0.148 ; Allur : -0.089; *mother's age below 25 years*: -0.064; mother's age above 25 year: -0.014.

tainly influence health, particularly that of young children. Poor levels of kitchen hygiene were found to result in greater child morbidity (Piler: 52.5 per cent; and Allur: 55.6 per cent) as indicated in Table 6. However, it remained high (63.7 per cent) in Piler even with moderate levels of hygiene. Children from both regions showed lower morbidity when kitchen hygiene was good. For the population as a whole thus, poor and moderate levels of kitchen hygiene were associated with higher child morbidity which decreased with good kitchen hygiene.

Conclusion

Sanitation in and around the house is determined by the number of people living in the house, the ventilation in the kitchen, the use of clean water, disposal of wastage, personal hygiene and kitchen hygiene. Among these variables, crowding, smoke, kitchen hygiene and disposal of waste have shown strong correlations with child morbidity indicating that the house is the main source of the morbid conditions seen among children. Ventilation and sanitation around the house should be improved to protect children from various communicable diseases. Further, greater child morbidity was noticed in general in Piler as compared to Allur, in relation to several environmental variables. Piler being a draught-prone area, is particularly socio-economically deprived. Although it is difficult to improve economic resources, social awakening can be brought about to improve the environmental conditions so as to prevent child morbidity.

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The influence of socio-economic characteristics on subsequent infant and child mortality

Mr. M. Muzibur Rahman, Dr. M. Kabir and Mr. M.A. Salam

Introduction

The level of infant mortality is widely used not only as a demographic measure, but also as an important indicator of the level of health in a society. Changes in mortality level can be attributed to socio-economic factors such as improvements in communication systems, improvements in primary health care services, control of epidemics, and the availability of health care facilities.

Recent studies on the determinants of infant mortality have indicated a wide range of factors that influence it[1]. Social and economic factors have been found to affect a child's chances of survival in many populations. These include ethnicity, the family's socio-economic status, education of the mother, parents' sex preference and place of residence[2]. Higher family income can generally be taken as an indicator of better nutrition and greater access to health care facilities which improve an infant's chances of survival. Cultural values associated with gender make an infant's sex an important factor in survival. A report from Bangladesh points to excessive female mortality especially in late infancy and early childhood[3]. Among the important factors which influence infant mortality are the mother's age at birth, birth order of the child, the length of the preceding birth interval, sex of the child, survival of the preceding sibling, and the duration of breastfeeding.

Many studies have demonstrated the importance of the length of the preceding birth interval for the survival chances of young children. The World Fertility Surveys have established increased mortality risks among children born after short birth intervals[1]. Current evidence for the most frequently suggested mechanisms of maternal depletion, sibling competition, and increased infectious disease transmission is fragmentary and inconclusive[4]. Mother's age at birth has been found to be another important determinant of infant mortality: there is an optimum reproductive age range which is associated with minimum risk: as age increases or decreases beyond this range, the

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risk of fetal mortality, still birth, perinatal and infant mortality rises[2]. The typical relationship of infant mortality with mother's age is U-shaped[5].

Birth spacing is also an important factor which influences mortality during infancy and once its effects are controlled, the effects of mother's age at birth, birth order of the child, and many other socio-economic characteristics become quite weak or even disappear[1]. Empirical studies of the length of the preceding or following birth interval and the mortality of the index child have almost invariably demonstrated that the overall association is predominantly a negative one; the shorter the intervals, the higher the risk of death[6].

Birth order is generally related to infant mortality. There is evidence that once the influence of mother's age is controlled, mortality during infancy as well as other childhood ages increased with the birth order of the child[5]. Breastfeeding could potentially be a confounding factor, since it affects both child survival and the length of the birth interval. It was observed that children with short preceding birth intervals were less likely than others to have ever been breastfed. Evidence accumulated over the years shows that breastfed infants run considerably lower risks of mortality and morbidity than non-breastfed or bottlefed children. In the Matlab Demographic Surveillance System (DSS) area, it was observed that breastfed children were better protected against diarrhoea[7].

Various surveys show that male mortality exceeds female mortality during the neonatal period, but the trend reverses during the post-neonatal period. Neonatal mortality is generally found to be higher among male infants as compared to female infants in many developing countries[3,8]. But the pattern gets reversed from the post-neonatal age, and higher female than male mortality continues in childhood. One of the important social factors that has been observed to be consistent in explaining the child mortality differential is the mother's educational level: the higher the level of the mother's educational attainment, the lower is the risk of dying for her children. Maternal education thus has frequently been stressed as an important determinant of child survival in developing countries[9-11].

Another fundamental distinction in developing countries is whether one lives in the countryside or in an urban area. The place of residence in these societies usually determines people's life styles, their perceptions of the world and of others, their economic, social, cultural and political activities, and most importantly how long they live. In developing countries, infant mortality is thought to be higher in rural regions than in urban areas because of differences in standards of living, health conditions and the availability of or access to public health facilities.

Methodology

Data for this study was derived from a large datafile called 'YETI' which was created from the information collected by the Demographic Surveillance System (DSS) of the International Centre for Diarrhoeal Disease Research Bangladesh (ICDDR'B) in Matlab Thana of Comilla District, Bangladesh. The DSS was initiated during 1963 in 83 villages having an approximate population of 28,000. The DSS began a continuous registration of vital events (births, deaths and migration) and linked these data with the information gathered through periodic censuses.

For the present research work, a sub-datafile was created from YETI. From this sub-file which contains the DSS data for the period 1974-1982, the variables selected were mothers who had experienced a second birth, and the age of the child at the time of death, and demographic and socio-economic variables for these mothers such as family type, occupation of household head, floor area of the dwelling, area type (experimental and control), mother's age at the time of the second birth, length of subsequent birth intervals, level of education of the mother and household head, and sex of the first child. Life table probabilities of infant mortality of the subsequent (second) child of those mothers who had experienced the loss of their first child were derived by controlling these socio-economic and demographic characteristics.

Results

Table 1 presents the life table probabilities of infant loss of the subsequent (second) birth of mothers who had lost their first child by controlling their socio-economic and demographic characteristics. The results show an inverse relationship between probable mortality of the second child and age at death of the first child. The probability of the second child dying at the neonatal or infant stage is highest when the first child loss has been neonatal, and decreases when the first child has died during the post-neonatal period or thereafter. Thus, the proportion of children dying before age one appears to be consistently higher in the group of mothers whose previous infant had died before the next live birth.

Table 1 also shows that while maternal age at birth affects the probability of the child dying during infancy, there were considerable differences in that the risk of infant loss was higher in the case of mothers under 20 years of age as compared to those who were 20 years and above. The probability of post-neonatal mortality of subsequent births was highest when the first child had died post-neonatally and among mothers below 20 years of age suggesting thereby that both the survival of the previous birth and maternal age exert independent effects on the probability of the subsequent child dying between birth and age one.

Early child death also reduces the childrearing responsibilities of mothers and may lead to an earlier resumption of sexual intercourse. Controlling for the interval between the first and second births, the probability of neonatal mortality of the second child was observed to be higher in the caseof a previous neonatal death, and was lower in the case of a previous post-neonatal and infant death. The effect of previous infant mortality on the survival of the subsequent child was probably a consequence of shorter birth intervals between the first and second births. Again, the results in Table 1 also in dicate that the chances of dying of the second child are higher when the previous death is that of a male rather than of a female child. This implies that the mortality of the male first child has a greater effect on the mortality of the second child as compared to the loss of a female first child.

When maternal education levels were examined, it was seen that it may, in fact, be a more sensitive indicator and should be used especially when children under one year of age are considered. It was observed (Table 1) that the mortality of the first child had a discernible impact upon the probability of mortality of the index child. The results clearly show that the chances of mortality were higher among infants children born to illiterate mothers than to mothers who had attained primary education and above.

The education of the household head was also found to be related to infant mortality. Thus, the probability of death for the second child was higher when the previous child death has occurred at the neonatal stage, and declined when it has been post-neonatal and thereafter. Likewise, infant mortality also depended upon the family size of the respondents (Table 1).

Analysing by occupation of the

TABLE 1
Life table probabilities of mortality of the second child by age at death of first child and socio-economic and demographic characteristics of mothers

Characteristics	Age at death of the first child (in months)	Age at death of the second child (in months)		
		1	1-11	12+
		.1800	.0375	.211
	< 1	.1800	.0375	.211
	1–11	.1011	.1026	.193
	12 and over	.0451	.0516	.094
Mother's age at time of second birth (years)				
> 20	< 1	.2600	.0270	.280
	1–11	.1333	.1538	.267
	12 and over	.0543	.0465	.098
20–24	< 1	.1111	.0519	.157
	1–11	.0789	.0597	.137
	12 and over	.0424	.0518	.092
Interval between first and second childbirths (months)				
> 18	< 1	.2373	.0460	.272
	1–11	.1111	.1905	.280
	12 and over	.0357	.0741	.107
18–35	< 1	.1212	.0345	.152
	1–11	.0714	.0263	.096
	12 and over	.0452	.0623	.105
36 and over	< 1	—	—	—
	1–11	.1818	.1176	.278
	12 and over	.0457	.0336	.078
Sex of the first child				
Male	< 1	.1964	.0443	.232
	1–11	.0750	.1370	.202
	12 and over	.0438	.0576	.099
Female	< 1	.1591	.0282	.183
	1–11	.1224	.0723	.186
	12 and over	.0465	.0453	.090
Years of schooling of mother				
0	< 1	.1791	.0566	.226
	1–11	.1231	.0901	.202
	12 and over	.0467	.0487	.093
1–5	< 1	.2105	—	.211
	1–11	.0769	.1667	.231
	12 and over	.0237	.0508	.073
Education of household head				
0	< 1	.0769	—	.077
	1–11	.0645	.1379	.194
	12 and over	.0376	.0448	.081

TABLE 1 *(Contd.)*

Characteristics	Age at death of the first child (in months)	Age at death of the second child (in months)		
		1	1-11	12+
Education of household head				
1–5 years	〈 1	.1333	.0800	.203
	1–11	.0769	.0909	.161
	12 and over	.0492	.0531	.100
6 years and over	〈 1	.0909	.0500	.136
	1–11	.1667	.0667	.222
	12 and over	.0293	.0614	.089
Family size				
1–4	〈 1	.0500	.0541	.101
	1–11	.0667	.0714	.133
	12 and over	.0504	.0613	.109
5–9	〈 1	.0134	—	.103
	1–11	.1212	.1071	.215
	12 and over	.0382	.0471	.084
10 and over	〈 1	.1429	.0833	.214
	1–11	.0714	.1538	.214
	12 and over	.0246	.0598	.083
Occupation of household head				
Farmer	〈 1	.1481	.0435	.185
	1–11	.1600	.2000	.328
	12 and over	.0219	.0605	.081
Service/business	〈 1	.2000	—	.200
	1–11	—	—	—
	12 and over	.0364	.0583	.093
Fisherman/labour	〈 1	.0323	.0251	.066
	1–11	.0625	.0667	.125
	12 and over	.0558	.0444	.098
Land owned (in decimal)				
0	〈 1	.2000	—	.200
	1–11	.1250	.1500	.256
	12 and over	.0299	.0432	.072
1–33	〈 1	.1765	.0367	.207
	1–11	.0980	.0667	.158
	12 and over	.0495	.0518	.099
34 and over	〈 1	.1429	.1667	.286
	1–11	.1250	.1429	.250
	12 and over	.0250	.0556	.079
Floor area of dwelling (square yards)				
170	〈 1	.1600	.0500	.202
	1–11	.1154	.1364	.236
	12 and over	.0476	.0394	.085

TABLE 1 *(Contd.)*

Characteristics	Age at death of the first child (in months)	Age at death of the second child (in months)		
		1	1-11	12+
171–300	⟨ 1	.1944	.0345	.222
	1–11	.1071	.0408	.222
	12 and over	.0314	.0520	.082
301 and over	⟨ 1	.1724	.0435	.208
	1–11	.1034	.1176	.209
	12 and over	.0526	.0583	.108
Area of residence				
Treatment area	⟨ 1	.0833	.0465	.126
	1–11	.0476	.1266	.168
	12 and over	.0412	.0423	.082
Comparison area	⟨ 1	.2857	.0345	.310
	1–11	.1707	.0615	.222
	12 and over	.0451	.0571	.099

household head, an indicator of socio-economic status of the family, indicated a higher risk of neonatal and infant mortality to the second child when the previous child death had ocurred during the post-neonatal stage. A similar relationship was evident in the case of landholding status. Table 1 also looks at the probability of mortality of the second child by age at death of the first child and floor area of dwellings. There is sufficient evidence that mortality rates are inversely correlated with levels of housing. Our findings also show a comparatively higher risk of post-neonatal and infant death in the case of the second child.

It is also evident from Table 1 that the chances of neonatal and infant mortality for the second child are much higher in the comparison area than in the treatment area. In the treatment area, the ICDDR'B hospital and field workers provide selected health interventions such as immunisation of children, tetanus vaccination for pregnant women, oral rehydration therapy for diarrhoea, antenatal and postnatal care, and training of traditional birth attendants for safe delivery of births. They also provide family planning services through their trained field workers. All this may have contributed to a reduction in infant mortality in the treatment area. In the comparison area, such inputs were not available except for treatment of diarrhoeal diseases and community based distribution of family planning methods.

Discussion

The results of this study provide empirical evidence for an association between socio-economic demographic characteristics of the respondents and survival of the subsequent birth for the corresponding mortality of the first child. The mortality of the previous child is observed to be a very important predictor of neonatal, post-neonatal and infant mortality for the subsequent children. The chances of neonatal and infant mortality are higher for second child when the first has died at the neonatal stage. The likelihood mortality decreases when the first death has occurred in the post-neonatal stage or when the first child was 12 months and above.

The chances of the second child dying

during the neonatal period or in infancy were twice as high when the mother had experienced the neonatal loss of her first child when she was below 20 years of age as compared to mothers who were 20-24 years of age. This suggests that the risk of subsequent child mortality decreases as maternal age increases. The systematic relationship between the length of the subsequent birth intervals and neonatal and infant mortality was particularly pronounced for birth intervals below 18 months.

The risk of neonatal, post-neonatal and infant mortality were lower in the treatment area than that of the comparison area. Household conditions that is the number of rooms also had a significant effect on neonatal and infant mortality of the subsequent birth. The risk of post-neonatal and infant death was comparatively higher who has only one room than those who have more than two rooms. Maternal education was an important determinant of the infant mortality level of the index child. The risks of neonatal and infant mortality were comparatively higher for children of illiterate mothers than of primary educated mothers. Education provides woman with decision-making power and gives them a scientific understanding of illness, making them more aware of child health[11].

Our results show that correlates of infant mortality of the second child are socio-economic characteristics such as birth order, the sex of the child, maternal age and the porevious birth interval. Among the socio-economic characteristics, the level of maternal education appears to be the strongest correlate of infant mortality while among demographic factors, the previous birth interval is the most influential.

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The small family norm: A sociological study of dual earner couples

Dr. (Mrs.) S.C. Sidramshettar

Introduction

Various studies indicate that the acceptance of the small family norm depends on a number of variables like education, income, nature of urban living, caste, religion and so on[1-3]. Studies conducted in various parts of India show that education coupled with employment of women has some impact on reducing the size of families[2,3]. Education and employment of women make people aware of the direct relationship between the number of children and the standard of living thereby motivating them to have smaller families in preference to larger ones. This shift has led to the breakdown of traditional values regarding large families.

There are reports that dual earner couple-families are also those that are small families[1,3]: female education and employment that lead to a palpable and enduring reduction in infant and child mortality are considered to be the prime movers of the small family norm. It has also been observed that educated employed women are more willing to engage in innovative behaviour[4]. They are more likely to be in a better position to discuss with their husbands the ways and means of avoiding or delaying pregnancies, since their relatively egalitarian status reduces the communication gap between the husband and wife. In addition, the employment of the wife increases the desire for a small family, so that remaining in employment is possible and easier.

Objectives

The present paper seeks to study the views of educated, employed couples about the small family norm with the purpose of analysing the process of change taking place in their marital and family lives. It is difficult to know how far their modern outlook coincides with their deep-rooted traditional ethos.

A large number of studies have addressed the issue of the small family on the basis of economic factors or medical advice, using quantitative methods[4]. However, no major attempt has been made to study the sociological problems of having a child, the timing and the spacing of children qualitatively. The present study, therefore,

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attempts to fill this gap.

Methodology

The study was conducted in the district headquarters, Dharwad, of Dharwad district in Karnataka state. Dharwad being an important educational, cultural and administrative centre of North Karnataka provided an opportunity to carry out the project fruitfully. The sample consisted of 100 couples where both the husband and wife were employed in white-collar jobs. They belonged to different occupational groups such as teachers, doctors and office workers. A working woman in order to qualify for inclusion in the sample was required to satisfy the following conditions:

1. Her husband should also be a white collar employee.
2. She should have been married for not less than two years.
3. She should not be a widow or a divorcee.
4. She should belong to one of the following three categories:
   - Teacher at a secondary school, graduate college or post-graduate department.
   - Office worker e.g an officer, clerk, typist or stenographer.
   - Doctor or Government employee.
5. She should have been in service for not less than two years.
6. She should have at least one child.

The proportional stratified sampling method was adopted to select the final sample of 100 couples. A structured interview schedule method was used for data collection. The couples were interviewed separately at their residence and or at the office. Along with the statistical analysis, case studies were also used for analysis and interpretation of data. Hence, with the help of this quantitative and qualitative data an effort was made to assess the changes taking place in such families with regard to family size and other related aspects.

Results and Discussion

In order to understand the family size norms of working couples in Dharwad city, opinion was sought on the ideal number of children a couple should have for leading a healthy and decent life.

TABLE 1
Distribution of respondents by actual and ideal family size

Number of children	Husbands		Wives	
	Ideal	Actual	Ideal	Actual
One	2	9	3	9
Two	82	59	82	59
Three	15	25	14	25
More	01	7	1	7
Total	100	100	100	100

The figures represent both number and percent respondents.

Table 1 shows that a majority of respondents (82 per cent) preferred two children as the ideal number for leading a decent life, while 15 per cent of the husbands and an almost equal proportion of wives (14 per cent) considered three children as ideal. A negligible proportion of respondents (1 per cent) thought of more than three children as an ideal family size. Thus, the highest number of respondents preferred two-child families which is considered a welcome and a progressive trend among working-wife families in Dharwad city.

When asked to mention the advantages of their preferred family size of two children, the following were cited: easy for the wife to continue to be in employment; children being better looked after and educated, better health of the mother is ensured, happier family life because of fewer problems, and so on. Thus, it can be safely concluded that working couples are becoming increasingly aware of the importance of having smaller families by curtailing the number of children.

An attempt was also made to relate the actual size of the families of the respondents to their preferred size. It was found that among nine one-child families in the sample, a fifth of the husbands (22.2 per cent) and a third of the wives (33.3 per cent) desired one child. Whereas over three-fourths of the husbands (77.8 per cent) and over three-fifths of the wives (66.7 per cent) desired two children, which means that their actual family size was less than their desired family size. This indicates that among one-child couples there is no complete agreement between the actual and desired family size. It is significant to note that these couples who have one child but desire two are still in their reproductive stage and hence in a position to fulfill their desire of having two children.

Among the 59 two-child families, almost the same proportion—56 husbands (94.9 per cent) and 57 wives (96.6 per cent) desired two children which shows that their actual family size is the same as their preferred family size. Very few desired three children. This indicates that among two-child couples there is a concurrence between the number of children that they have and desire.

Among the 25 three-child families again, almost three-fifths of both husbands and wives (60 per cent and 56 per cent respectively) said that they had wanted two children, which shows that their actual family size was greater than their desired family size. And, in the rest of the cases, there was a concurrence between the desired and actual family size. When the respondents were asked to explain the difference between their desired family size and actual family size, they replied that they went in for the third child (much against their ideal of two children) solely due to gender preference, i.e. those couples who had two daughters went in for a third child with the hope of getting a son while those who had two sons went in for a third child with the hope of getting a daughter. This is what Mrs. R., a teacher, had to say—

> "When we got married we decided that we should have only two children—a boy and a girl. But, as luck would have it, the first two children were girls. We were a little disappointed. We were firm on our resolve of limiting the number of children to two. We were considering whether I should undergo the laparoscopic operatoin or my husband should go in for vasectomy. When my parents-in-law got scent of ou- intentions, they lost no time in mounting a pressure campaign against our decision. They mustered the support of my sisters-in-law and also my parents to persuade us to give up the idea of termination of further biriths. They pleaded with us to give nature one more chance to bless us with a son. This ever-increasing persuasion coupled with our own innnermost desire to have a son ultimately triumphed and we 'yielded'. But man proposes and God disposes. Our third child arrived—again, a baby girl; so we are now a family with three daughters".

The story of Mrs. L, a junior assistant, was altogether different. While the calculations of Mrs. R and her husband in quest of a son went haywire, the calculations of Mrs. L and her husband did so in quest of a daughter. This is what was narrated:

> "When we got married we wanted to have an ideal family of two children—a boy and a girl. Our first son was born within two years of our marriage. We were both happy that things were going the way we wanted them to. As decided earlier, we kept a space of three years.
>
> "During the fourth year, we went in for the second child. When I was in the family

way, my husband and I used to have endless discussions regarding our would-be daughter—how she would look, what we would call her, how she should be brought up and so on. We anticipated the bliss of having a daughter; especially my husband never tired of repeating a Kannada saying, *Maga maduveya varega, magulu mannina varege* (a son is a son till he gets married; a daughter is a daughter till the end of our lives). On the 'D' day, I was taken to the maternity hospital by my husband with great expectations. I delivered a child early in the morning. Behold the child was a boy.

"My husband was perturbed by this turn of fate. But this made him doubly determined in his resolve to have a daughter though it meant saying goodbye to our earlier plan of having a two-child family. We set out to have one more child as soon as the weaning period was over. So within two years after the birth of our second son, our third child arrived and luckily for us, especially for my husband, the child was a baby girl. We also came across a few couples who said that the realisation of having an ideal two-child family dawned on them too late, that is, after the arrival of the third or even the fourth child". Mr. K, an office assistant, narrated the following story:

"Though both of us had heard about the small family norm and the family planning campaign with its catching slogan—

"Keeratige obba maga
Arathige obba magalu"
(A son for glory: a daughter for grace)

"We had never taken it seriously. In fact, within a short span of eight years after our marriage, our four children—two sons and two daughters—were born. The problem of having a big family was brought home to us rather forcefully when we were transferred from a small mofussil town where we were working to Dharwad. In Dharwad, life was much different from the life we led in the small town. Life was not only costlier but also different in several ways. The folly of having a big family with four children was rubbed into us on the very first day when we went to admit our children to school. Most of our neighbours and collegues had enrolled their children in English medium schools. We too thought our children should study in English medium schools. But when we came to know that we had to spend a lot of money (running into four figures) on each child for donation, fees, uniforms, books, tution and transport, we gave up the idea. We could never afford that much for schooling our four chidlren. That's when we wished that we had only two children".

Among the seven four-child families in the sample, four husbands (57.1 per cent) and five wives (71.4 per cent) had wanted two children, two husbands (20.5 per cent) and one wife (14 per cent) had desired three, and very few, four. Thus, again, among these couples also, the actual family size was greater than the preferred family size.

It is interesting to note that even among the four-child couples (seven cases), a majority of the husbands and wives (57 and 71 per cent respectively) considered a two-child family as ideal. Our attempt to seek an explanation for this gap between the ideal and actual family size brought out some interesting facts. These couples spent their chidbearing age in joint families and bore their children when they were living in these families. Perhaps, the general atmosphere of a joint family, which is always in favour of a larger number of children, induced them to have more children than what they deemed to be ideal. Also, living in a joint family which freed them from the responsibility of childcare could have been one of the factors that prompted them to produce more children than deemed ideal by them. This is what Mrs. Y had to say:

> "We spent nearly 12 years after our marriage in a joint family in a small mofussil town. Three of my husband's elder brothers were engaged in the management of the family's lands and orchards. My husband, the last son of his parents, was the one to complete his graduation and get a Govenment job. I worked in a local high school and my husband shuttled between our village and Dharwad where he worked in a Government office. Both of us being relatively better educated than the rest of the members of the family and holding jobs, enjoyed a privileged position in the family. My father-in-law particularly was very proud of us and would announce in his booming voice, "No one should ever expect them to attend to any household chores. They have enough responsibility which 'eats their head' in the office and school. Let them relax. Let them not be bothered about this mundane work". So, in such a congenial and carefree environment, we went on procreating with gay abandon, and had five chidlren within a span of twelve years. To tell you frankly except for the period of confinement, I do not remember to have concerned myself with the rearing of children. Everything was attended to by the other members of the family. But things changed when my father-in-law died of a sudden heart attack. Eventually, the joint family broke up and we shifted to Dharwad. Now that I have to fend for myself, I realise the mistake of bearing so many children".

Desired interval between marriage and the first childbirth

It is a significant fact that the sociological problems of having a child, "how late after marriage" and the spacing of children should be influenced by economic factors or medical advice and by the ethos of a race. The Indian ethos (which is essentially the Hindu ethos even when an individual is not a Hindu) is guided by the principle of obligation to one's own spiritual welfare (however well or ill-understood it may be) than by a hedonistic approach to the present.

Educated, working couples too like to have a son even though they do not believe in the idea that it is the son's duty to carry out the religious rites after his parent's death. Probably, the parents want to assure themselves that they can have a child. Besides, the education of a son and his becoming economically independent (and if it is daughter, her marriage) while the parents are still earning is an added advantage. For, unlike in the West, the education and marriage of children, particularly of daughters, is still a family responsibility in India[5]. The Western approach of enjoying life for some years before taking on the responsibilities of bringing up a child is something almost foreign to the Indian psyche. Women who would not like to have children at all lest they lose their physical charm because of bearing children are rare.

With this in view, responses relating to the gap between marriage and the first child have also been analysed. The respondents were asked to state the ideal time after marriage for a couple to have its first child. Table 2 reveals that a majority of the respondents (59 per cent of husbands and 58 per cent of wives) desired an interval of one year between marriage and the first childbirth. They said that since they got married late, they would like to have a child early in order to overcome the fear of barrenness/impotency. Besides, they wanted their children to settle down in life before they retired from service.

However, almost two-fifths of the respondents (38 per cent of all husbands and 40 per cent of all wives) favoured a gap

TABLE 2

Distribution of respondents by desired interval between marriage and the first childbirth

Desired interval	Husbands	Wives
Within one year	59	58
Two to three years	38	40
Four years	3	2
Total	100	100

The figures represent both number and percent of respondents.

of 2-3 years between marriage and the first child, the reason being that they could better enjoy married life without the responsibility of looking after children. Respondents who favoured a four-year gap were very few in number. Thus, the figures suggest that by and large, the choice of the respondents relating to this issue lies between one to three years.

The fear of impotency and barrenness is very strong in India. Very few stigmas carry the odium of contempt as does impotency in a man and barrenness in a woman. Hence, the couple seems to be ever eager to prove that they are normal and capable of bearing children. This, perhaps, accounts for the universal demographic phenomenon of India where the first birth takes place within a year after the consummation of marriage. If there is any delay, say of two or more years, tongues begin to wag. The needle of suspicion which intially swings in the direction of both husband and wife generally tends to stand still pointing towards the wife. The fact that India is a male-dominated society comes through very forcefully, indeed cruelly, in such matters; if the husband is impotent, all measures are taken to guard the secret. Many a time the wife takes the onus on herself. If, on the other hand, the wife is found to be barren, very hell breaks loose. Woe befalls the woman who is incapable of procreation—her life becomes miserable; she becomes a social outcast. Once it is established that a woman is barren, immediate steps are taken to arrange for a second alliance for the husband with or without the consent of the first wife.

In the course of our study we came across an intersting case which throws some light on this issue. Mr. Y and his wife Mrs. M are LIC (Life Insurance Corporation) employees. Both of them are graduates and hold good jobs with good prospects. They live in a comfortable house with their three children in Dharwad. The following is the episode narrated by Mrs. M:

> "My father-in-law was a politician and a sitting MLA when we got married. He celebrated the marriage of his only son with pomp and fanfare. He not only managed to get both of us good jobs in the LIC, but also constructed a good house in Dharwad for us to live in. So, our married life started with gusto and great expectations. Physiologically, both of us were normal. Therefore, like all the newly married couples, we wanted to crown our happiness by bearing a child. But destiny had willed otherwise. I did not conceive during the first year. Both of us were worried and ran to the medical experts. All of them, after a battery of tests, confirmed that everything was normal and that there was nothing to worry. Two years passed and there was no sign of my conception. This marked the beginning of my problems. People at my husband's place who had hitherto treated me with love and affection suddenly changed their attitude. My mother-in-law especially seemed to get worked up as years and months passed without any sign of my pregnancy. She launched a campaign of getting a second wife for my husband. Initially, my father-in-law, who was an enlightened man, opposed the move, advising patience to my mother-

in-law. But, as the days and months passed, he too succumbed to the pressure of getting a second wife for his son. In the beginning, my husband never mentioned this subject to me. Though the rumours of this move had reached my ears through my relatives, I kept my cool hoping against hope that I would soon conceive and that the crisis would blow over. But that was not to be. When the arrangements for the second marriage reached the final stage, my husband brought up the matter hesitantly. He said that he still loved me and that he bore no ill-will towards me, but he had to consider the feelings of his parents. Most important, he had to perform his duty as the only son in the perpetuation of the family-line. For me it was a great blow. Though I had anticipated it, when it actually fell, I was crushed. My agony knew no bounds. I was lost, I did not know what to do. Ultimately, I reconciled to the inevitable on one condition—that my husband should not bring my "savati" (co-wife) to stay with us. My husband, who still had considerable affection for me, readily agreed. So it was decided that his second wife should stay in the home of his parents at his native place. A temple marriage was arranged and my 'savati' stayed with my parents-in-law. My husband used to visit her on weekends. However much we pretended not to allow these developements to sour our relations, they did cast a shadow between us. We seemed to play our respective roles almost mechanically without love and warmth.

"Months passed by and a year was over after the second marriage. To the great disappointment of many of my husband's relatives, and especially his mother, the second daughter-in-law did not conceive. Clouds of dismay overcast the entire family. My husband was visibly disturbed. Torn by self-doubt and remorse, he became miserable. I could see and feel it. But there was very little I could do about it. All that I could do in those circumstances was to sympathise with him. To cut a long story short, two years after the second marriage, and four years after our marriage, I conceived. A son was born and the entire complexion of our family life changed."

Spacing between births

Birth spacing is an important element of the family planning programme because it helps safeguard the health of mothers and children. It is an established fact that the greater the space betwee children, the better it is for the health of the mother and the child. This also facilitates better upbringing of children. Hence, a question was asked to elicit information on this issue. The results are presented in Table 3.

TABLE 3
Distribution of respondents by desired interval between births

Desired birth interval (years)	Husbands	Wives
None	7	26
2-3 years	44	64
4 or more	49	10
Total	100	100

The figures represent both number and percent of respondents.

Table 3 shows that over two-fifths of the husbands (44 per cent) as compared to over three-fifths of the wives (64 per cent) favoured a gap of 2-3 years between births. More husbands than wives wanted a four year or longer birth interval. The wives preferred the comparatively short spacing of 2-3 years inspite of the greater inconvenience for the same reason that they wanted their first child early, and more, so if the first child was a daughter. Significantly, the eleven lady doctors in our sample believed that late (after 30 years of age) pregnancy and childbirth is hazardous to the health of the mother and child. These lady doctors who were married between the age 25 and 30 also favoured a gap of 2-3 years between births because late pregnancy and childbirth may entail unnecessary health risks for the mother and child.

These findings then indicate a considerable difference in opinion between the husband and wife regarding birth spacing. However, when actual birth intervals are examined, we find that a majority of the couples had observed a 2-3 year gap between births, suggesting that in such matters the opinion of the wife had prevailed over that of the husband.

The reluctance of the wives to use family planning methods prompted us to enquire deeper into the issue. Our probing on the subject revealed the following reasons for this reluctance—

1. A number of wives, including the highly educated and enlightened ones, said that the use of the oral pill was not only bothersome but that it was also a difficult method. After the initial enthusiasm, many find it difficult to follow the regular or daily pattern.

2. The Copper-T was not favoured mainly for three reasons. Some women did not feel comfortable wearing the Copper-T. Some confided that their husbands did not relish intercourse with the Copper-T in situ. The third reason was that the Copper-T was not totally reliable. In support of their contention they cited examples of women who had conceived despite the use of the Copper-T, and that such conceptions had led to a number of health problems.

3. The objection to the use of Nirodh was mainly from the men. The wives reported that their husbands were not in favour of using Nirodh since it curtailed their sexual gratification. They also expressed their own apprehensions about "accidental conceptions" due to manufacturing defects in Nirodh.

Male child preference

The traditional norms and social values attached to children in an Indian society are formulated to encourage the birth of male children. A woman without a child, particularly a male child, is not only subjected to ridicule but invites the prejudice and ill-will of her family in particular, and of the society in general. A married woman's status in her husband's household increases only after the birth of a son. Also, couples with more sons are admired. Again, though polygamy is no longer popular in India, childlessness and the inability to produce a male child may induce a man to establish a polygamous household.

Among the Hindus, the 'shraddha' ceremony (a ritual performed after death) following the loss of the father or mother is to be performed by the son. It is believed that if the 'shraddha' is not performed, the soul of the father or mother will not complete its transmigration and achieve reincarnation. In addition, sons are regarded as an economic asset to the family, and a means of security for the parents in their old age. Sons are also required to continue the family lineage and uphold the family status.

In urban India, a decline in mortality on the one hand and a change in the very concept of the 'survival of society' on the other, seems to have taken place. But, the overall pattern only shows a partial change in traditional norms which has resulted in some changes in the values attached to children. This change is only partial because, even today, there appears to be a strong bias for a male child in urban areas where new social norms and values usually have a great influence. This is evident from many demographical and sociological studies. Hence, in order to elicit information on this aspect, a question was asked to the respondents to specify their actual and preferred sex combination of children.

Table 4 shows that though there were nine one-child families in the sample, none preferred one child. We have noted that such couples are still in their reproductive stage and hence in a position to fulfill their desire of having a child.

Though a majority of the husbands and wives (three-fourths) desired a one male and one female child combination, only 26 per cent actually had such a sex composition. Further, though 19 couples had two sons and 14 had two daughters, very few preferred such a composition, the preference for two sons rather than for two daughters was high.

Among three-child couples, none desired all sons, though nine couples did have sons only. Again, the respondents' preference for two sons as compared to two daughters was higher. This indicates the preference for male children irrespective of desired family size. Though seven families had more than three children, very few of them desired more than three children (we have already noted that such couples had spent their childbearing years in joint families).

TABLE 4
Distribution of respondents by sex composition—actual and preferred

Sex composition	Actual Preferred	Sex composition	
		Husbands	Wives
One child			
One male	6	–	–
One female	3	–	–
Total	9	–	–
Two children			
Both male	19	4	6
Both female	14	1	–
1 male + 1 female	26	75	74
No preference	–	2	2
Total	59	82	82
Three children			
All male	9	–	–
2 male + 1 female	6	13	13
1 male + 2 female	9	2	1
No preference	9	–	–
Total	25	15	14
More than three children	7	3	4

The figures represent both number and percent of respondents.

Conclusion

The findings of our study suggest that the compulsions of urban life coupled with other forces of modernisation may have brought about a change in traditional norms regarding family size. The educated middle class apparently no longer believes in traditional values such as "children are the gift of God", "more (children) the merrier" and so on, as revealed by the observation that a significant majority were unequivocally in favour of a fewer number of children and small families. Nevertheless, all the forces of change and modernity do not seem to have shaken the roots of the stigma attached to barrenness among women and impotency among men. Moreover, the proverbial preference for a male child continues to be intact even among educated and employed couples. This calls for innovative IEC strategies to counter son preference.

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Towards a multi-dimensional assessment of alienation in a group of working women

Dr. K. Vijayanthi Mala and Dr. K. Bharathi Kumari

Introduction

Sometimes people are ignored and abandoned by others. This is alienation which may be viewed as "loneliness", "normlessness", isolation and so on. The dictionary of social sciences has defined alienation as "estrangement or separation between parts or the whole of the personality and significant aspects of the world of experience". The psychological aspects of alienation refer to the state of self-alienation and to the awareness of the separateness from one's own inner reality. The qualities of self-alienation can be listed according to deficiencies in existence, cognition, feeling, recall and behaviour.

Alienation of class society comprises of differential behaviour associated with the various class positions in terms of background and current lifestyles. These differences are not merely ascriptive but encompass communicational, cognitive, existential and behavioural lifestyles.

Previous studies have measured a variety of potential effects of alienation on different aspects. Relationships between several measures of psychological adjustment and social alienation were studied in a sample of Indo-Chinese refugees[1] and alienation was found to be positively correlated to the degree of perceived differences between the refugees and Americans. Gon[2] observed a non-significant difference in feelings of alienation among different groups while Mohanty's[3] study revealed that there was no significant difference between the sexes as far as alienation was concerned.

A study[4] of factors which lead to alienation among occupationally successful young adults concluded that subjects whose background included a high socio-economic status and graduation from elite colleges were more likely to experience alienation than others. Examining the major social correlates of alienation and its major components such as powerlessness, social isolation, normlessness and meaninglessness amongst Chinese students, Mal[5] found that the school, class and type of parenting were significant correlates of alienation.

Raymond and Fisher[6] reported that student-teachers had significantly higher

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levels of alienation, isolation, normlessness and powerlessness than full-time teachers. The less experience the teacher had the higher were his or her levels of total alienation and powerlessness. Raymond and Raymond[7] examined the levels of alienation amongst adolescents from traditional and non-traditional backgrounds to determine whether family variables and economic factors were related to levels of alienation. They observed that subjects from traditional families with a strong religious commitment were more alienated than their peers. Alienation was directly related to socio-economic status of the subjects' parents and to the subjects' grade levels.

Objectives

One of the main drawbacks of previous studies is the non-availability of information about social alienation and socio-demographic factors, values and organisational atmosphere of working women. The limited data points to the need for further studies on the influence of factors related to social alienation among working women. Hence, the present study was designed to study the relationship between socio-demographic factors, values and organisational atmosphere, and alienation and to analyse the differences between professional and non-professional working women with reference to alienation. The following hypotheses have been advanced:

1. The socio-demographic factors, values and organisational atmosphere of working women are related to alienation.
2. Highly professional women are more alienated as compared to non-professional women.

Methodology

This study can be classified as correlational research. It includes three types of independent variables i.e. demographic variables, values, and organisational atmosphere, the impact of which has been studied on social alienation (the dependent variable). A sample of 132 working women was drawn from the Jamia Milia University and hospital. The sample consisted of 58 professional women (professional group), and 74 office employees who comprised the non-professional group of working women. Working women who were cooperative and available for the study were also included.

The assessment of alienation was made by administering the alienation scale of Ray[8]. The scale consisted of twenty questions with 'yes' or 'no' responses on the basis of which scores were given. The values were assessed by administering the revised edition of Allport et al[9]. The scale consisted of two parts: 30 statements and 15 statements covering the total value pattern of theoretical, economic, aesthetic, social, political and religious status and ideas. The organisational atmosphere questionnaire was a 20 item type scale, with scores on five factors—pride or esprit, authority, fairness, hindrance and administration[10].

Quantitative data were analysed by applying the 't' test, correlational analysis, and multiple regression analysis.

Results and Discussion

Table 1 presents the means and 't' values for social alienation for professional and non-professional groups. The findings show high means for both professional and non-

TABLE 1

Difference in social alienation between professional and non-professional working women

	Mean	SD	SEM	't'
Professional women	12.52	2.34	0.34	4.13*
Non-professional women	9.22	3.77	0.62	—

$P < 0.01$

professional women (12.52 and 9.22 respectively). The 't' value is highly significant and indicates that highly professional women are more alienated as compared to their non-professional counterparts.

The construct value of alienation was further examined by calculating the correlations using several criterion variables such as demographic factors, values and organisational atmosphere. The correlations between alienation and demographic factors are presented in Table 2.

TABLE 2

Correlations between social alienation and demographic factors among professional and non-professional working women

Factor	Professional women	Non-professional women
Wife's age	-0.04	0.07
Wife's education	0.34*	-0.37*
Wife's income	0.16	0.17
Wife's occupation	0.09	-0.46*
Wife's order of birth	0.06	0.12
Duration of marriage (years)	-0.15	-0.01
Type of marriage		-0.09
Husband's education	0.49*	-0.01
Husband's income	0.21	0.09
Husband's occupation	0.42*	0.11

* $P < 0.01$

The most striking pattern is that of education which appears to be a significant positive predictor of social alienation among professional working women. However, among non-professional women, education and occupation were significant negative predictors. Table 2 also reveals that the education and occupation of the husbands of professional working women were highly correlated, indicating that these two demographic factors play a dominant role in determining alienation in highly professional working women. Education is an important aspect of social status in the alienation of working women as it determines the kind of job the person can get and the amount a person can earn. Well-educated husbands often hold high status jobs and in return, have higher income levels. Hence, their wives are most alienated as they are more conscious of their husbands' education and status. Another study on alienation has also reported that social support variables are the most important predictors of alienation[11].

Table 3 presents the relationship between alienation and value factors as also organisational atmosphere factors among the two groups of working women. The values range from an insignificant positive correlation to a negative correlation, the only exception being in the non-professional group, where aesthetic value is significantly correlated to social alienation (Panel A).

TABLE 3

Correlations between social alienation and value factors among professional and non-professional working women

Factor	Professional women	Non-professional women
A. *Value factor*		
Theoretical	-0.15	-0.29
Economic	0.29	-0.16
Aesthetic	-0.24	0,32*
Social	0.07	-0.12
Political	-0.29	0.002
Religious	0.07	0.16
B. *Organisational atmosphere*		
Esprit	-0.04	-0.36*
Authority	0.10	-0.08
Fairness	-0.37*	-0.14
Hindrance	0.16	-0.21
Administration	-0.17	0.08

$P < 0.05$

Surprisingly, neither of the factors of organisational atmosphere seem to be related positively to social alienation of working women in both groups (Table 3, Panel B). Thus, these factors cannot account for the relationship between organisational atmosphere and social alienation.

The data was further analysed by using multiple regression analysis in order to find out the predominant factors which influence alienation. The results presented in Table 4 show that the husband's occupation is the single best predictor of support for alienation in working women. Education and income of the husband are also related to the social alienation of their working wives. Other factors such as the wife's income and occupation have negligible effects. These findings conform with those of other researchers[4, 5, 7].

TABLE 4
Multiple regression results between social alienation and demographic factors

Independent Variable	Multiple R	Beta	F
Wife's age	0.134	0.130	0.312
Wife's education	0.267	-0.215	1.023
Wife's income	0.342	0.418	0.980
Wife's occupation	0.394	0.283	1.818
Wife's order of birth	0.397	0.061	0.252
Duration of marriage (years)	0.426	-0.307	1.771
Type of marriage	0.429	-0.057	0.213
Husband's education	0.495	-0.057	0.104
Husband's income	0.462	-0.055	0.093
Husband's occupation	0.506	0.372	3.092*

* $P < 0.05$

Summary and Conclusion

The study has examined the relationship between demographic factors, values and organisational atmosphere in relation to social alienation of highly professional and non-professional working women. A major finding is that highly professional working women are more alienated than non-professional working women, thereby proving the hypothesis advanced. Besides, their alienation is related positively to their husbands' education and occupation. Among non-professional working women on the other hand, the wife's education and occupation are significantly related to her alienation but the association is negative.

The results further suggest that the aesthetic value of non-professional working women is related to social alienation. None of the factors relating to organisational atmosphere are positively related to social alienation of working women. Lastly, multiple regression showed the husband's occupation to be the single dominating factor for alienation of working women. These findings substantiate empirically that social alienation of working women is linked to demographic factors.

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Knowledge, attitude and practice of family planning among fishermen in Tamil Nadu

Dr. G. Rama Rao, Dr. K. Moulasha and Dr. S. Sureender

Indian Society consists of immensely varied political, social, ethnic, linguistic, religious and community groups, which, by and large, reside in villages, where poverty, misconceived religious notions, social customs, illiteracy, ignorance and superstitions prevail. The Government of India launched a family welfare programme in the early 1950's to accelerate the country's economic and social development, and has formulated an official policy with the aim of reducing the rate of population growth. The programme was accorded special priority during the 1960s and 1970s, but has so far only met with marginal success, that is, till 1989-90, only 41.9 per cent of the total eligible couples had been effectively protected[1], and the target of reducing the birth rate from 40 to 25 per thousand population by 1991 remained only a pious wish. A possible reason for this is that a uniform policy is being followed for the entire country with an emphasis on permanent methods without considering the needs and preferences of the local people. For example, in Goa and other places a considerable percentage of women successfully use natural family planning methods which are not included in the list of official family planning methods[2].

As mentioned above, the people of India being multilinguistic, multireligious and multiethnic, it is necessary to develop special programmes to tackle the needs of different groups. Hence before launching a special programme, a thorough understanding of the differentials and determinants of fertility and mortality is essential. In recent years, the need for such studies has been felt so that more specific knowledge can be gained about factors determining fertility and family planning acceptance by particular communities, which can be used for developing suitable programmes for them. Since very little is known about the demographic condition, fertility and family planning behaviour of the fisherman community in India in general and Tamil Nadu in particular[3-6], an attempt has been made to study family planning behaviour among this community.

Lifestyle of fishermen in Tamil Nadu

The fishermen of Tamil Nadu are locally

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known as 'pattanavars' (literally, a dweller in a town or pattanam, which word occurs in the names of various towns on the seacoast such as Nagappattanam or Chennapattanam), and are popularly called 'Karaiyans' or seashore people. This community continues to possess the basic characteristics of a folk society despite the urban environment around it, and remains homogeneous in social, economic and cultural matters, and the caste panchayat exercises judicial and social control over its members[4]. The major portion of the life of these fishermen is spent at sea; they have little time for taking an active part in familial issues, much less to speak about their interaction, either culturally or socially, with other communities. Consequently, women assume a vital place with regard to the upbringing of the children and in the household. Only the male members go fishing while the women folk are involved in domestic work and also participate in offshore activities, and in selling fish.

Research design

Thanjavur district is conspicious among all the eight coastal districts of Tamil Nadu in its produce of marine fish which accounts for about 30 per cent of the total marine catch of the state. Trenquebar, a taluk in Thanjavur district, was selected as the study area based on information from the Thrangampady Pattanavar Panchayat Office that this taluk has played a significant role in marine fishing in the district.

According to the records of the Panchayat Office, there were 803 fishermen's households in the study area, with 560 eligible couples. As a first step, eligible couples (wife aged 15-49 years) were enumerated (558) and one-third (185) of them were selected by systematic sampling. With the help of a well-structured questionnaire, information relating to knowledge, attitude and practice of contraceptive methods was collected from the wives.

Results and Discussion

The paragraphs which follow describe the knowledge, attitude and practice of family planning among the fishermen as also the number of children ever born.

Knowledge about family planning methods

Table 1 presents a distribution of the respondents by their knowledge of contraception. It indicates that family planning knowledge was widespread, and that all the respondents were aware of at least one method of contraception. Among the

TABLE 1

Percentage distribution of respondents by knowledge of family planning methods

Method	Without probing	With probing	Total knowledge	No Knowledge	Total percentage	(N)	Ever users
Loop	39.0	30.8	69.8	31.2	100.0	178	5-2.8%
Pill	56.5	30.5	87.0	13.0	100.0	177	
Condom	30.5	37.4	67.9	32.1	100.0	174	
Vasectomy	78.4	20.0	98.4	1.6	100.0	185	
Tubectomy	94.0	2.7	96.7	3.3	100.0	184	37-20%
Abstinence	87.8	10.5	98.3	1.7	100.0	181	28-15.5%
Rhythm	16.3	48.2	64.5	35.5	100.0	141	

Note: The total sample size varies among the methods due to non-response for particular methods.
(N) - Total respondents

TABLE 2
Percentage distribution of respondents by reasons for favourable/unfavourable attitude to family planning

Reason	Percent
Favour FP:	
It helps to maintain the standard of living	31.7 (47)
It makes the family small and happy	27.7 (41)
It limits the family and reduces expenditure the	23.0 (34)
It protects mother's and child's health	17.6 (26)
Do not favour FP:	
Operation harmful to health	45.2 (14)
It is against religion/God	29.0 (9)
Children are God's gift	16.1 (5)
Fear of death of living children	9.7 (3)

The figures in brackets represent the number of respondents.

various methods, female sterilisation was most well-known—by 93.5 per cent of respondents, and by another 2.7 per cent following probing. The next best-known method was male sterilisation, reported by 78.4 per cent of the respondents though many more reported knowledge (20 per cent) on probing. Among the temporary methods, the oral pill ranked first (56.5 per cent), IUD (39 per cent) next, followed by the condom (30.5 per cent). The knowledge of these methods increased to 87.0, 69.8 and 67.9 per cent respectively after probing.

Abstinence was the most commonly known natural method in the study area, and was in fact, the best-known method among both natural/conventional and modern methods. Among the respondents, 88 per cent knew about this method, and the level of knowledge increased to 98 per cent after probing. Reported knowledge of the rhythm method, on the other hand, was only 49 per cent, even after probing.

The findings presented in Table 1 also suggest that probing played a significant role in determining the actual level of knowledge, in general for all methods, and particularly for the three temporary methods (condom, IUD and pill) and especially for the rhythm method. The low level of knowledge reported by the respondents prior to probing and the subsequent increase following probing may be due to shyness of the fisherwomen to respond to questions about contraceptives, the fact they had only heard about the method but did not know much about it, and problems of understanding the concept of family planning methods.

Attitude to family planning and reasons for favour/disfavour

The attitude of the respondents to family planning indicated that the majority (80 per cent) were in favourable of family planning. Among the remaining respondents, 16.8 per cent expressed disapproval and 3.2 per cent claimed to have no idea about family planning.

The prominent reasons stated by respondents who held favourable attitudes to family planning were by and large economic (Table 3), the most important being "to maintain the standard of living" (31.7 per cent). Apart from this, health reasons such as "mother and child health are protected" were given by about 18 per cent of the respondents.

TABLE 3
Percentage distribution of respondents by family planning practice

User and method	Percent
Ever user	37.8 (70)
Method ever used	
Abstinence	40.0 (28)
IUD/Pill	7.0 (5)
Tubectomy	53.0 (37)

The figures in brackets represent the number of respondents.

The chief reasons given by respondents who disapproved of family planning were that "the operation makes people weak and it is harmful to their health" (45.2 per cent). That family planning is against religion/God and "children are God's gift" was expressed by an equal number (45.1 per cent), and fear of child loss was the least mentioned reason (by about 10 per cent). The findings clearly indicate that adoption of family planning has been hampered on account of the fear of side effects, and hence appropriate measures are called for to remove the existing fears and doubts about the use of various methods among the people.

Family planning practice

The findings reveal that almost two-fifths (37.8 per cent) of the respondents had ever used some type of contraception during their married life. Among the methods, sterilisation was the most accepted method. Nearly a fifth (19 per cent) of all the respondents and 52 per cent of all ever users reported to have adopted sterilisation (Table 3). It may be noted that though vasectomy was well known, not a single vasectomy had been performed in the study area. This clearly indicates that only women were active in the adoption of permanent methods. Next to tubectomy, abstinence was the most popular method and around 42 per cent of the ever users reported to have practised it. Such a high percentage of couples practising natural methods is not found among other societies. At the same time, one need not doubt the finding as a high percentage of the respondents not only reported knowledge of abstinence but also approved of it. Only 6.2 per cent of the ever users had accepted temporary methods like the IUD and oral pills.

The above findings reveal that among the respondents who had accepted family planning, tubectomy ranked first; there was not even a single case of male sterilisation. The reason for this is probably the type of occupation that the men folk are engaged in—since fishing is hard work the fishermen do not want to take any risk which would affect their livelihood by accepting vasectomy, which they fear will affect their health and strength.

Family planning and children ever born

The average number of children ever born to the respondents in the study area was 3.99. It was observed that over half (55 per cent) of the respondents had accepted some form of family planning method (abstinence, sterilisation) only after the age of 35. This clearly indicates that the idea of planning the family came at a very late stage of their life, or after having completed the desired family size. The average number of children ever born for those currently practising abstinence was 5.4, which clearly supports the above view that the effect of this method on unwanted pregnancy is minimal.

Conclusion

The study reveals good knowledge and favourable attitudes (80 per cent) towards family planning among the fishermen community of coastal Tamil Nadu. However, only 37.8 per cent were found to have accepted some form of family planning, among which sterilisation and abstinence were most widely practised. Among the sterilisation acceptors, all were female. In fact, not a single vasectomy case had been performed in the study area, the major reason being the fear that it would affect their health and consequently their day-to-day activity of fishing which is their only source of income.

The study reveals that the knowledge of permanent methods and abstinence among the respondents was more than that of temporary methods. Therefore, intensive efforts should be made to popularise temporary methods and birth spacing. For this, suitable special orientation training camps should be organised to remove the misconceptions about the use of various family planning methods. Additionally, the IEC programme should be further strengthened so as to motivate the people to adopt family planning methods at an early stage of their married life.

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Family formation: Socio-cultural differentials in age at first marriage in Sri Lanka

Dr. W. Indralal De Silva

Introduction

Family formation, in terms of marital frequency and timing, among different socio-cultural groups, is one of the important fertility influencing variables. Fertility decline in Sri Lanka has been strongly associated with a shift from early marriage to late marriage. Fernando[1] has ascribed almost all of Sri Lanka's fertility decline between 1963 and 1970 to a change in female age at marriage while Alam and Cleland[2] have attributed 59 per cent of the fertility decline between 1963 and 1971 and 46 per cent of the decline between 1971 and 1975 to marriage changes. However, marriage transition has not been the same for all socio-cultural groups: if some groups lagged behind, it would be difficult to reach the target of replacement level fertility target (a total fertility rate of 2.1) by the year 2000.

The Sri Lankan Government regards population growth as one of the crucial factors for its economic development, and therefore, in the population policy statement issued in 1991 it has set itself a replacement level fertility target, which would result in a stable population by the middle of the next century.[3] Since the number of women entering the reproductive ages in Sri Lanka during the present decade will be much larger than that during the previous decades, an examination of the socio-cultural differences in age at first marriage will be useful for policy planners to monitor family formation and fertility trends in Sri Lanka.

Data and Methods

The data used in this study come the Sri Lanka Contraceptive Prevalence Survey (SLCPS) of 1982. The SLCPS was the last survey to cover the whole country.[4] Because of the civil was in the Northern and Eastern provinces, which constitute about 14 per cent of the population, these areas were not included in any subsequent survey. Therefore, this survey provides rich information about the marriage patterns of the ethnic and religious groups of the entire country. The basis of the SLCPS was multistage probability sampling. The total sample size was 4500. The respondents were

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or had been married and were aged 15-49, and their rate of responses on demographic and socio-cultural variables was found to be high[4].

Multiple classification analysis was used to evaluate the effect of socio-cultural factors on age at marriage. The independent variables were place of residence, education, religion and ethnicity. The analysis was carried out for the total sample as well as for the three age cohorts.

Results and Discussion

In Sri Lanka, as elsewhere, age at first marriage is highly associated with many socio-cultural factors. Therefore, the relationship between selected socio-cultural variables, and age at first marriage of women aged 25 years and over who married before 25, in considered and their mean age at marriage at different age cohorts was estimated; these are presented in Table 1.

TABLE 1

Mean ages at first marriage of women aged 25 years who married before age 25 by selected variables for three age cohorts

	Age cohort (current age in years)		
Variable	25-34	35-44	45-49
Residence			
Urban	20.1	19.4	18.7
Rural	19.4	18.5	17.9
Estate	19.2	18.2	17.2
Education			
None	17.8	17.3	17.2
Primary (≤ 5 yrs)	18.5	18.0	17,8
Secondary (6-9 yrs)	19.9	19.3	19.0
Higher (10+ yrs)	21.4	21.1	20.9
Ethnicity			
Sinhalese	19.6	18.8	18.2
Sri Lankan Tamil	18.7	17.7	17.8
Indian Tamil	18.7	17.9	16.8
Moors	18.1	16.9	16.6
Religion			
Buddhist	19.6	18.8	18.2
Hindu	18.6	17.5	17.2
Muslim	18.1	17.0	16.7
Christian	19.2	18.8	19.4

Source: SLCPS individual data tape.

Place of residence

It is commonly found among developing countries that rural women are more traditional than urban women. Therefore, women in rural areas are more likely to marry at a younger age.[5] In rural areas, it si argued that parental or familial control over the marriage decision is influential. Also, rural women are less likely to go to school for long periods and there is less opportunity for them to engage in work outside the home. Urban women have the highest estimate of mean age at first marriage, which is about one year higher than the estate women at young ages; but among the oldest age group the difference was larger.

Level of education

Many studies show a positive relationship between educational attainment and marriage timing among females.[6, 8] In Sri Lanka also, school attendance certainly has a strong influence on the timing of female marriage.[9, 10] However, there is a possibility that the most highly educated women are disproportionately in the younger cohorts and have characteristics other than education which may also influence the timing of marriage.[11] On average in Sri Lanka, women with higher education married almost three and half years later than women with no education. Mean values also indicate a modest increasing trend in age at marriage from the older to younger ages.

Ethnicity and religion

All the three age cohorts in Table 1 cleraly indicate the Sinhalese (74 per cent of the Sri Lankan population) as the group with the highest mean age at marriage and the Moors with the lowest. In the 25-34 cohort, both Sri Lankan Tamils and Indian Tamils married at identical ages and in the 35-44 cohort to they showed little difference.

In Sri Lanka, ethnicity and religion are closely interrelated. The Sinhalese are mostly Buddhist, the Tamils are mostly Hidu, and the Moors are virtually all Muslim, while Christians are the only group which is a combination of all ethnic groups. Therefore, the estimates of age at marriage by ethnicity and religion may show a common pattern. In the 25-34 age group, Buddhist women reached the highest mean age at marriage which is almost one year above, that of Hindu women (Table 1). The mean age at marriage of Christians remained higher and almost unchanged across the age groups.

Multivariate Analysis

We have seen that there are major differences between certain subgroups of the population with respect to the age at marriage. However a bivariate analysis does not determine the extent to which these differences are directly related or associated with the particular variables considered. For example, an effect of education upon age at first marriage encounters various complications arising from the influences of other factors such as age, ethnicity, religion and urban-rural residence. To evaluate and quantify the importance of the four background variables on age at first marriage, multiple classification analysis (MCA) was used.

MCA results (Table 2) show education to be the independent variable most closely related to age at first marriage. There was almost a four-year difference in the unadjusted means between the highest and lowest categories of education. This difference did not change significantly even after statistical adjustment to take account of the influence of other variables on education. Highly educated women who married before they reached 25 had married, on average, at the age of 22, while women with no education had done so at the age of 18. The importance of eduation with regard to

TABLE 2

Multiple classification analysis of relation between age at first marriage and selected variables

Variable	Number of Cases	Mean age at marriage (years)	
		(Unadji)	(Adj)
Age (ETA=.16, ß=.09)			
25-29	782	19.9	19.8
30-34	652	19.8	19.7
35-39	579	19.2	19.3
40-44	448	18.9	19.2
45-49	432	18.5	19.0
Residence (ETA=.10, ß=.10)			
Urban	631	20.1	19.7
Rural	2060	19.3	19.3
Estate	202	19.1	20.4
Education (ETA=.37, ß=.33)			
None	572	18.1	18.2
Primary (≤ 5 yrs)	1119	18.8	18.9
Secondary (6-9 yrs)	929	20.2	20.1
Higher (10+ yrs)	318	21.9	21.7
Ethnicity/Religion (ETA=.16, ß=.14)			
Sinhalese/ Buddhist	2032	19.7	19.7
Tamil/Hindu	444	18.7	18.6
Moor/Muslim	192	18.2	18.6
Christian	225	19.7	19.3

Grand Mean = 19.4

R^2 = 0.163

Note : The ETA coefficient indicates the proportion of the variation in the dependent variable explained by the predictor alone (unadjusted means). The BETA (ß) coefficient shows what proportion of the variation is explained by the predictor after taking into account the proportion explained by other predictors.

Source : SLCPS individual data tape.

variation in age at marriage in Sri Lanka is emphasised by its high Eta and Beta coefficients. At 0.37 respectively, these easily ranked highest among those for the explanatory variables considered.

For the ethno-religious categories considered in Table 2, the largest difference in unadjusted mean ages at marriage, about one and half years, occured between Christians and Moor/Muslims. Adjusted figures indicate the same pattern. However, the mean for Moor/Muslims showed an increase while the opposite was true of that for Christians, so that the difference between the two groups was much reduced. Christians may be more concentrated in urban parts of the country than the other ethno-religious is controlled their mean age at marriage is depressed. After statistical adjustment, the mean age at marriage of Sinhalese/Buddhists remained unchanged, in fact, becoming the highest (19.7 years) of the adjusted means.

Residence showed the expected pattern of unadjusted mean ages at marriage; the mean was highest for urban women, followed by the rural and estate women. However, after adjustment, the pattern changed. Estate women now showed the highest mean, and this was more than half a year higher than the urban mean. One cannot be very precise about this change, but it may

TABLE 3
Multiple classification analysis of relation between age at first marriage and selected variables controlling for age

Variable	25-34 years			35-44 years			45-49 years		
	No of cases	Mean age at marriage		No. of cases	Mean age at marriage		No. of cases	Mean age at marriage	
		(Unadj)	(Adj)		(Unadj)	(Adj)		(Unadj)	(Adj)
Residence	(ETA = .09,ß = .08)			(ETA = .13, ß = .12)			(ETA = .11, ß = .10)		
Urban	312	20.4	20.0	220	19.8	19.3	99	19.1	19.0
Rural	1019	19.7	19.6	729	18.9	18.9	312	18.3	18.3
Estate	103	19.6	20.8	78	18.7	20.2	21	17.7	18.0
Education	(ETA = .36, ß = .35)			(ETA = .36, ß = .34)			(ETA = .28, ß = .26)		
None	180	18.2	18.2	212	17.9	17.9	135	17.6	17.7
Primary	503	19.0	19.0	431	18.5	18.5	185	18.3	18.3
Secondary	559	20.3	20.3	276	19.9	19.8	94	19.4	19.4
Higher	192	21.9	21.8	108	21.6	21.5	18	21.5	21.2
Ethnicity/Religion	(ETA = .15, ß = .14)			(ETA = .16, ß = .10)			(ETA = .19, ß = .18)		
Sinhalese/ Buddhist	991	20.1	20.0	718	19.3	19.4	323	18.7	18.7
Tamil/Hindu	221	19.1	19.4	172	18.1	18.0	51	17.7	17.6
Moor/Muslim	106	18.7	19.2	60	17.6	18.0	26	17.0	17.1
Christian	116	19.7	13.4	77	19.8	19.2	32	18.8	18.5
Grand mean			19.8			19.1			18.5
R^2			.145			.160			.160

Note : Same as Table 2.
Source : SLCPS individual data tape.

have arisen from controlling for level of education. Estate women are much more poorly educated than the rest of Sri Lankan women,[12] and once the effects of this variable are controlled the adjusted mean age at marriage of estate women rises sharply.

As expected, both unadjusted and adjusted mean ages at marriage were negatively related to current age. Although age has been used as an explanatory variable in this analysis, it can also be used as a control variable. Table 3 shows the relationship between age at first marriage and the other three predictors controlling for age.

For all three age groups (25-34, 35-44 and 45-49) the unadjusted mean age at first marriage was highest for urban and then rural women and estate women. The difference between the adjusted and unadjusted means diminished with decreasing age, from 1.4 years for the oldest group to 0.8 years for the youngest. However, after adjusting for other variables, the pattern changed considerably. The mean age at marriage of estate women aged 25-34 increased by 1.2 years to rank highest among those for the three residential categories. Similarly, among women aged 35-44, the estate mean had increased and again ranked as the highest. In the age group 45-49, no such change was evident; unadjusted and adjusted means were very similar, not only for residence categories but also for ethno-religious and education categories.

The adjusted means clearly show the negative relationship between educational attainment and age at marriage in all age groups. Without exception they were almost the same as the unadjusted means (Table 3). In the youngest age group, the observed mean age at marriage was highest among Sinhalese/Buddhists, while in the two older age groups Christians led. However, the adjusted means were always highest for the Sinhalese/Buddhists. Though the means for the Moor/Muslim group ranked lowest on all occasions, after adjustment they increased in each age group. The reverse was true for Christians.

Summary and Conclusion

There are clear socio-cultural differentials in female age at first marriage in Sri Lanka. At the bivariate level, urban women and highly educated women were observed to have married later than rural women and uneducated women. Sinhalese and Buddhist women had married later than Moors and Muslims. The level of education clearly gave rise to a considerable differential in age at marriage, even after all other variables are statistically controlled; highly educated women married by age 25 had married at an average age of 22 years, uneducated women at about 18.

Although after adjustment for other variables Moor/Muslims still showed a lower mean age at marriage than Sinhalese/Buddhists or Christians, the differentials were narrow. This was true even among younger women. There were only small differences in unadjusted mean ages at marriage among the residence categories considered. However, after adjustment the differential became larger and its direction was reversed. Estate women had the highest mean age at marriage for all age cohorts except that aged 45-49.

The strong relationship between education and age at marriage may not be unexpected. Not only does a longer period of education delay the search for a job, but the more educated desire jobs which are harder to get. Education may also be associated with a later marriage age since educated children are likely to have a say in deciding when they will marry. Since well educated and employed females are able to support themselves and most of their families, certainly they do have a greater say over their marriage and that means there is less incentive for the parents to pressurise them into marrying early.

It is natural to expect from the above findings that with further improvements in the overall level of education, especially with the encouragement of higher female education, the female age at marriage within all sociocultural groups in Sri Lanka will further increase.

Since additional efforts are required during this decade to reach replacement level fertility, as the number of women entering the reproductive ages will be much higher than the number that entered during the previous decades, even a marginal increase in female age at marriage will be immensely helpful for policy planners to achieve the said target before the beginning of the next century.

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News and Notes

'Investing in Health'

Although "health conditions around the world have improved more in the past 40 years than in all of previous human history", enormous health problems remain, according to 'Investing in Health', the 1993 *World Development Report* published by the World Bank.

The Report says that some 43 per cent of the burden of disease in Sub-Saharan Africa is due to complaints which could be cheaply prevented and cured.

Applying a 'cost-effectiveness' criterion, the Report suggests governments should spend less on prestigious and expensive hospital facilities and concentrate their funds and efforts of expanding immunization services, schoolbased health services, campaigns to reduce the level of smoking and alcohol consumption, information about nutrition and family planning, and efforts to prevent the spread of AIDS. Such efforts would work best if accompanied by broader efforts to reduce household poverty in the poorest countries and improve education, especially for girls.

The Bank, which claims to have quadrupled its lending for health over the past six years to $1.5 billion, also emphasizes the importance of promoting diversity and competition in the supply of health services. However, it does not address the criticism that its structural adjustment programmes have led to worse health for the poor: Christian Aid suggests that Zimbabwe's Structural Adjustment Programme, which introduced cost recovery and reduction in health service, has led to increased maternal mortality rates because fewer women can afford clinic attendance.

Women's perspectives in population and reproductive health

The Family Planning Association of India has published the proceedings of its national conference of non-governmental organizations on the topic of 'Women's Perspectives in Population and Reproductive Health'. Held in April 1993 in New Delhi, the conference featured speakers from all over the world, including the Director of IPPF's South Asia Regional Bureau, Dr. Indira Kapoor. The report covers topics such as 'Women's perspectives in choice and use of contraceptive methods' in three countries, 'Quality of Care of Services in Health and Family Planning', and reports of discussion groups. The report is available for Rs. 60 or US $ 6.00.

Contact: Director Publications, FPAI, Bajaj Bhavan, Nariman Point, Bombay 400 021.

Restriction on abortion a major threat to women's lives

Almost two decades after most industrialized countries legalized abortion, unsafe illegal abortion remains a major cause of death among women in the developing world, where more than half of all abortions are performed. Of the estimated 50 million induced abortions world-wide each year, more than one-third are illegal, and nearly half of all abortions take place outside any health care system according to a new report from Population Action International. *Expanding Access to Safe Abortion: Key Policy Issues,* (September 1993).

The report says that limits placed on access to safe, affordable abortion services are the key factor behind continued high levels of abortion-related deaths and injury, but have little effect on the degree of reliance on abortion as a method of family planning. In Romania, the ban on abortion and contraception by former president Nicolai Ceausescu did not lead to higher birth rates overall, but did contribute to a doubling of maternal deaths, of which 87 per cent were attributed to unsafe abortion. After the ban was lifted, the number of maternal deaths fell by half.

The vast majority of developing countries only permit abortion to save a woman's life or for limited health reasons. In many of these countries, unsafe abortion accounts for one quarter to one half of all pregnancy and child-birth-related deaths. And even in countries where abortion is legal, women may not have access to safe services. The report also highlights the significant burden that unsafe abortion places on health care systems. Reports from many developing countries confirm the high cost of treating women for spetic and incomplete abortions.

Millions need contraception to preserve health

An average of one in five sexually active women are in need of contraception to safeguard their own and their children's health and survival, according to a new report on the Demographic and Health Surveys' data from 28 developing countries. *(Comparative Studies 8: High Risk Births and Maternity Care, Columbia,* Maryland: Macro International, 1993).

Author Shea Rutstein argues that contraceptives can play a crucial life-saving role through reducing the incidence of births associated with high rates of maternal and childhood mortality. While 120 million women are usually estimated to have an unmet need for contraception due to childbearing preferences, the report argues that this rises by 25 per cent when the need to reduce the risk of maternal and childhood mortality is taken into account.

Overall, 76 per cent of sexually active women in North Africa, 72 per cent in sub-Saharan Africa, 57 per cent in Asia and 53 per cent in Latin America and the Caribbean are at risk for potentially life-threatening pregnancy outcomes but are not using family planning.

Source: IPPF Open File, October, 1993.

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Tempo of fertility in Orissa: A study based on birth intervals

Dr. K.B. Pathak and Dr. Arvind Pandey

Introduction

The level of fertility of a population is said to be the outcome of the speed with which women bear children and their parity progression ratios. Hence, any change in current fertility could be due to changes in either of the two or both factors. While data on birth intervals is considered as an indicator of the speed of reproduction, a number of indirect methods have been evolved to measure parity progression ratios. The analysis of data on birth intervals ascertained under various inspection plans has received considerable attention in the recent past mainly because of the availability of considerable data from almost all the surveys, and their sensitive nature in detecting small changes in fertility patterns.

It has been realised that data on the most recent birth intervals may be of great use in detecting current changes in fertility[1]. It has also been pointed out that an analysis of the most recent birth intervals along with open birth intervals can provide an estimate of the parity progression ratios[2-4]. The effect of the use of various temporary as well as permanent contraceptive methods can be measured through a knowledge of these duration variables. In a traditional society where child spacing is not voluntarily attempted, the length of closed birth intervals may be as large as those in women who space births voluntarily mainly due to lactational amenorrhoea.

In some societies where women avoid sex during the period of breastfeeding, the mean length of the closed birth intervals may be as high as in population using a high percentage of temporary methods of contraception. While breastfeeding prolongs the amenorrhoeic period of the one hand, abstinence beyond the period of amenorrhoea helps the couple to delay the next conception. A comparison of the mean closed birth intervals of contracepting and non-contracepting women within traditional societies may therefore indicate the gain due to contraception. Similarly the analysis of open birth intervals is likely to reflect the extent of permanent control exercised by the women in addition to the incidence of secondary sterility.

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As indicated above, data on closed birth intervals reflect the speed of childbearing and that on open birth intervals indicate the quantum of fertility; we use the term 'tempo of fertility' to include both these aspects. Although Ryder[5] has termed the first itself as the tempo of fertility, we consider the term in totality.

Orissa is one of the backward states in India with a very high rural population, a low literacy rate, low age at marriage, and high infant mortality. The fairly high performance of the state in the field of family planning with a lower population growth than that observed in many other backward states, has created a great deal of interest among Indian demographers to study the level and pattern of fertility in Orissa. A strong differential in the standard of living between the people in rural and urban areas of the state has been observed. Until 1980, more than 65 per cent of the rural population was below the poverty line, and only about 25 per cent of the population in urban areas had a lower coefficient of variation than its rural counterpart[6]. Against such a rural-urban contrast, this paper attempts to analyse the differentials in the tempo of fertility by rural-urban residence of women in Orissa.

Data and Methodology

Keeping the aforesaid objective in view, data on closed and open birth intervals collected from a large-scale baseline sample survey in the state of Orissa during the year 1980, were analysed. The survey covered about 5,000 households with 4,568 eligible couples both from rural and urban areas of five districts of the state. As Orissa is predominantly rural with more than eighty per cent of its population living in villages, a bigger sample was taken from the urban areas. Thus, 3,999 households were selected from the rural areas and 1,000 households from the urban areas. Details about the survey and its major findings are given in the report of the survey[6].

The survey collected a variety of data on fertility, mortality, migration and socio-economic characteristics of the households. Information on the last closed birth interval and open birth interval were gathered from all the eligible women. While simple averages were used to study the first dimension of fertility in the population, parity progression ratios (PPR) were calculated to throw light on the second dimension by using a method discussed by Srinivasan et al[3].

Results and Discussion

In studying differentials in the tempo of fertility in Orissa by rural-urban residence of couples, we had two hypotheses in mind. First, the tempo of fertility in rural areas is high because of the low level of contraception, and second, it is high because of the high preference for male children. With these hypotheses in view, all the currently married women were categorised into three groups, namely (a) couples who had never used any contraception (temporary or permanent), (b) couples who had been sterilised, and (c) couples who had ever used a temporary method of contraception.

The tempo of fertility for these three categories of women was studied separately in rural and urban areas. Birth intervals when the previous birth was a male or a female were also identified. Parity progression ratios for various combinations with regard to the sex of the last two children were made subsequently in order to see the possible role of the sex of the child on the tempo of fertility.

Closed birth intervals

Averages of the most recent closed and open birth intervals of the three categories of couples by parity, for rural and urban areas as well as combined are presented in

Table 1. It was observed that the average interval between two births was almost the same over different parities except at higher parities, say, six and above. In fact, an over-representation of the shorter intervals is expected at higher parities due to the truncation effect on the distribution of birth intervals caused by the upper bound of reproductive life. This pattern prevailed for both rural and urban women. The average closed birth interval in the population was found to be about 40 months (Tables 1 and 2).

These closed birth intervals are notably the most recent closed birth intervals and hence, at lower parities, they are subject to censoring bias more than the truncation bias, whereas at higher parities and/or ages, they are subject more to truncation bias than censoring. Nonetheless, it is evident from Tables 1, 2 and 3 that the average birth interval (both closed and open) for contracepting couples was consistently lower than that for women who had never used any contraception.

The mean closed birth intervals for different parities of women did not show any differential by type of residence i.e. rural and urban areas, probably due to the segregation effect of rural migrants especially among non-contracepting couples in urban areas. Further, it was observed that the mean open birth interval among rural and urban women who had never used any contraceptive method was almost the same.

TABLE 1

Observed moments of closed and open birth intervals (in months) among all women by parity and contraceptive status, Orissa

Moments indicators	Parity							
	1	2	3	4	5	6	7	8+
$E(T_i)$								
Group I	41.31	41.31	40.65	41.85	39.23	39.55	36.19	37.22
Group II	39.75	39.75	38.26	35.23	35.83	35.39	33.91	31.15
Group III	37.98	37.98	39.84	39.33	41.24	44.79	4.32	39.95
Total	40.82	40.05	39.60	38.24	38.78	35.97	37.03	34.79
$E(T_i^2)$								
Group I	2574.19	2574.19	2112.79	2256.97	2005.85	2030.94	1845.24	1768.45
Group II	2131.87	2131.87	1885.65	1577.67	1552.42	1532.86	1732.84	1382.00
Group III	1996.01	1996.01	2048.27	2028.86	2148.31	2596.37	2416.65	2322.57
Total	2472.66	2054.77	2027.21	1874.41	1930.06	1860.56	1848.12	1600.48
$E(U_i)$								
Group I	40.91	37.18	44.31	50.79	52.54	55.34	59.12	64.41
Group II	114.20	77.10	75.43	78.97	77.32	74.94	73.69	74.01
Group III	61.86	57.66	51.32	70.22	68.52	63.88	70.68	81.00
Total	42.56	42.95	51.94	61.08	62.42	62.61	64.86	69.73
$E(V_i)$	253.25	176.50	194.29	153.68	132.78	127.60	129.44	102.09
$\frac{E(V_i^2)}{E(V_i)}$	155.05	120.17	122.94	103.03	81.39	92.81	87.87	74.35

Group I: Never users; Group II: sterilised; Group III: Ever users.

T_i–i–th closed birth interval; U_2–Open birth interval after i–th births

V_i–Open birth interval of women of completed fertility.

TABLE 2

Observed moments of closed and open birth intervals (in months) among rural women by parity and contraceptive status

Moments indicators	Parity							
	1	2	3	4	5	6	7	8+
$E(T_i)$								
Group I	41.12	41.12	40.37	42.11	39.69	39.18	37.09	38.05
Group II	41.60	41.60	38.84	34.69	36.85	36.52	35.12	32.00
Group III	42.31	42.31	42.00	43.10	44.81	46.35	44.10	38.22
Total	41.24	41.24	40.15	39.25	39.25	40.29	38.20	36.64
$E(T_i^2)$								
Group I	1658.43	1658.43	2060.58	2272.48	2042.95	1991.60	1928.96	1860.47
Group II	2282.43	2282.43	1896.46	1558.50	1639.12	1610.95	1956.27	1490.81
Group III	2367.95	2367.95	2191.94	2406.77	2426.33	2770.13	2762.69	2301.11
Total	1765.85	1765.85	2034.25	2069.20	1949.93	1977.28	2058.23	1826.81
$E(U_i)$								
Group I	40.70	37.19	44.18	49.98	51.54	53.23	58.70	66.83
Group II	133.67	74.23	72.71	76.49	76.96	74.63	68.85	75.30
Group III	65.65	58.69	53.82	63.56	65.42	66.03	68.35	82.38
Total	42.26	42.12	50.97	60.02	60.69	60.96	63.67	70.81
$E(V_i)$	253.25	176.50	194.29	153.68	132.78	127.60	129.44	102.09
$\frac{E(V_i^2)}{E(V_i)}$	155.05	120.17	122.94	103.03	81.39	92.81	87.87	74.35

Group I: Never users; Group II: Sterilised; Group III: Ever users.
T_i–i–th closed birth interval; U_i–Open birth interval after i–th birth;
V_i–Open birth interval of women of completed fertility.

TABLE 3

Observed moments of closed and open birth intervals (in months) among urban women by parity and contraceptive status

Moments indicators	Parity							
	1	2	3	4	5	6	7	8+
$E(T_i)$								
Group I	42.23	42.23	41.79	40.59	39.56	41.43	32.29	30.93
Group II	33.80	33.80	36.66	37.43	32.59	32.57	30.48	28.83
Group III	31.39	31.39	32.50	27.08	32.07	33.20	30.20	46.88
Total	39.30	39.30	39.69	38.06	34.26	36.75	31.39	32.24
$E(T_i^2)$								
Group I	2844.35	2844.35	2324.87	2190.18	1928.94	2244.70	1255.39	1138.40
Group II	1684.90	1684.90	1868.47	1664.56	1283.21	1346.85	1109.76	1124.67
Group III	1450.76	1450.76	1612.08	1812.86	1462.34	1370.44	1089.74	2542.71
Total	2458.07	2458.07	2421.03	2097.74	1773.47	1596.49	1814.59	1323.23
$E(U_i)$								
Group I	41.97	37.11	44.84	54.80	58.35	65.78	60.97	50.24
Group II	85.00	86.27	82.85	88.97	78.44	75.71	87.52	70.80
Group III	53.44	56.09	42.80	91.80	76.50	48.00	80.00	75.50
Total	43.75	46.28	55.43	70.17	69.35	69.18	73.06	63.62
$E(V_i)$	253.25	176.50	194.29	153.68	132.78	127.60	129.44	102.09
$\frac{E(V_i^2)}{E(V_i)}$	155.05	120.17	122.94	103.03	81.39	92.81	87.87	74.35

Group I: Never users; Group II: Sterilised; Group III: Ever users.
T_i–i–th closed birth interval; Ui–Open birth interval after i–th birth;
V_i–Open birth interval of women of completed fertility.

However, there was a significant difference between rural and urban women especially those who had ever used any contraceptive method (temporary or permanent method).

While this finding supports the previous argument of the segregation effect of rural migrants in urban areas on the one hand, it indicates the necessity of analysing open birth interval distributions separately for contraceptors and non-contraceptors in the three categories of women. The mean closed birth interval was observed to have decreased with parity indicating that such couples were highly fecund and conscious about their family size, and had on average more children before they were motivated to accept sterilisation, as their desired family size had been fulfilled.

Sex preference and parity progression ratios

The effect of sex preference of the couples and its effect on their subsequent fertility was studied by determining the parity progression ratios for the following four groups:

a) women having at least two births with both the last and last but one birth as male;
b) women having at least two births with the last but one as male and the last birth as female;
c) women having at least two births with the last but one as female and the last birth as male; and
d) women having at least two births with the last two as female.

Table 4 presents the average closed and open birth intervals by sex of the previous child, as a male or a female, in rural as well as urban Orissa. The lower mean birth intervals (both closed and open) observed in the case of the previous child being female as compared to male is indicative of the sex bias in fertility as discussed in the paragraphs that follow.

The parity progression ratios among contracepting and non-contracepting women both in rural and urban areas estimated by combining the closed and open birth intervals are presented in Table 5. The findings

TABLE 4

Observed moments of closed and open birth intervals (in months) among all women by sex of the child and parity

Moments indicators	Parity 1	2	3	4	5	6	7	8+
$E(T_i)$								
P. Sex M	41.84	39.76	41.35	39.31	40.46	36.35	36.69	36.23
P. Sex F	39.72	40.09	37.99	36.83	37.08	35.07	37.80	35.85
$E(T_i^2)$								
P. Sex M	2580.91	2030.32	2169.95	1991.21	2104.36	1979.27	1850.54	1800.30
P.Sex F	2354.50	2057.94	1899.88	1726.65	1767.45	1708.34	1884.14	1375.53
$E(U_i)$								
P. Sex M	44.81	45.67	58.40	62.30	60.65	62.67	62.93	71.30
P.Sex F	39.79	39.81	44.18	59.69	64.30	62.55	67.01	68.19
$E(V_i)$	253.25	176.50	194.29	153.68	132.78	127.60	129.44	102.09
$\frac{E(V_i^2)}{E(V_i)}$	155.05	120.17	122.94	103.03	81.39	92.81	87.87	74.35

P. Sex M – Sex of the previous child as male;
P. Sex F – Sex of the previous child as female.

indicate that the estimates of parity progression ratios successfully measure the effect of the use of conventional methods of contraception on the overall family formation system.

An estimated 20 to 30 per cent of births were avoided both in rural and urban areas by temporary methods over and above those prevented by the use of permanent methods, at each parity. Interestingly, the level of primary sterility appeared to be high among rural women. Also, the force of progression until parity two was high in the urban than in rural areas indicating a high level of subfecundity among rural women. An abrupt decline in the parity progression ratios after parity three especially among urban women shows that there was greater acceptance of family limitation among urban couples as compared to their rural counterparts. Birth spacing practices were also evident only after parity three.

It is interesting to observe that the parity progression probabilities implied from the

TABLE 5
Estimates of parity progression ratios (PPR)

Moments indicators	Parity 1	2	3	4	5	6	7	8+
Rural								
Group I	0.8478	0.8292	0.8085	0.6976	0.5364	0.5873	0.4763	0.1507
Group II	0.7036	0.6669	0.7137	0.5255	0.2940	0.4244	0.3440	—
Group III	0.8440	0.7903	0.7374	0.5576	0.3661	0.4665	0.3957	0.0716
Urban								
Group I	0.9317	0.9603	0.8210	0.6342	0.4188	0.4112	0.3924	0.4309
Group II	0.7701	0.6602	0.8166	0.1610	0.0835	0.6209	0.1140	—
Group III	0.8992	0.8312	0.7303	0.4354	0.2169	0.3324	0.2499	0.1993
Total								
Group I	0.9213	0.9323	0.8110	0.6868	0.5168	0.5581	0.4600	0.1120
Group II	0.7237	0.6658	0.7366	0.4248	0.2325	0.4533	0.2920	—
Group III	0.9016	0.8170	0.7294	0.5342	0.3357	0.4511	0.3647	0.0900
MM	0.8875	0.7872	0.6674	0.5242	0.3745	0.4596	0.3971	0.0616
MF	0.9280	0.8491	0.8145	0.5578	0.3086	0.4614	0.3319	0.1244
FM	0.8790	0.7883	0.6590	0.5118	0.3603	0.4403	0.3952	0.0553
FF	0.9191	0.8503	0.8042	0.5445	0.2969	0.4420	0.3303	0.1117

Group I: Never users; Group II: Sterilised; Group III: Ever users.
MM–Sex of the last two consecutive births as male;
MF–Sex of next-to-last birth as male and of the last birth as female;
FM–Sex of the next-to-last birth as female and of the last birth as male;
FF–Sex of the last two consecutive births as female.

The estimate of PPR is obtained from the following formula:

$$PPR(i) = \frac{E(U_i) - \dfrac{E(V_i^2)}{2\,E(V_i)}}{\dfrac{E(T_i^2)}{E(T_i)} \quad \dfrac{E(V_i^2)}{2\,E(V_i)}}$$

where, PPR(i) denotes the parity progression ratio from parity "i" to "i+1", $i > 0$.

mean closed and open birth intervals given in Table 4 do not show appreciable differentials over the four combinational situations (relating to the sex of the last two children which the women had most recently achieved) after parity four and above (Table 5). A significant variation in the parity progression ratios was seen at lower parities, as expected. The achievement of at least one male child avoided four to six per cent of the subsequent births. The ratios for the combination of two consecutive male children were consistently lower than those observed in the case of two consecutive female combinations.

Table 5 also clearly shows that as many as 89 per cent of the women who had one male child, went for a second child, and 79 per cent went for the third chid after having had two consecutive male births. The corresponding percentages in the case of female child combinations were about 92 and 85 respectively. Similarly, while 67 per cent of the couples proceeded for the third child and about 52 per cent for the fourth after having had two consecutive male births, 80 per cent and 55 per cent of the couples respectively went for their third and fourth children after they had had two consecutive female children. The effect of such bias in fertility seemed to be neutralised only after parity four.

The aspiration for a male child seemed to increase in the case of couples who had a female child followed by a male child. This is confirmed by the observation that the parity progression ratio decreased if the couple achieved a male child after a female child. Such socio-cultural inertia to hold the tempo of fertility high appeared to be strong until parity four, and was found to be neutralised only beyond it.

Conclusion

We have studied the pattern of child spacing and parity progression, using data on the last closed and open birth intervals along with data on the time elapsed since the last birth to the end of the childbearing age. Data on the latter variable appeared to be limited in size especially when the method was applied for various sub-groups of the population due to the small number of women in the age group 45-49 years. A further modification in the method to move away from the requirements of such data is realised. Nevertheless, we have been able to study successfully the rural-urban differential in the tempo of fertility in Orissa using baseline survey data in the context of the contraceptive status of couples.

Long average birth intervals for Orissan women especially in rural areas were observed possibly due to the practice of prolonged breastfeeding. Urban couples with shorter mean birth intervals appeared to be conscious about the use of contraception. While the tempo of fertility in Orissa seems to be low on account of subfecundity among rural women, in the urban areas, this is due to the accelerating acceptance of contraception (both temporary and permanent). The aspiration for a male child up to parity four seems to be responsible for holding the tempo of fertility at the present high level. Any effort to decrease the tempo of fertility below parity four will essentially require motivation of younger couples to space their births backed by a delay in the first birth.

Measures taken to raise the age at marriage of females and the promotion of female education are evidently the most effective means of persuading couples to accept the small family norm. This would undoubtedly give a better chance of survival to children. The nutritional status of mothers and children also needs to be improved. The analysis of open birth intervals by the contraceptive status of women combined with the survival status of the index child would throw more light on the contraceptive behaviour of women.

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Post-partum programme in India: Some financial issues in Rajasthan (sub-district level)

Dr. Brijesh C. Purohit and Dr. Tasleem A. Siddiqui

Initiated in the year 1966 in 25 hospitals all over the globe, the Post-partum Programme (PPP) found its beginning in India in two hospitals situated in New Delhi and Trivandrum. The basic idea underlying the post-partum programme was initially that the post-delivery or post-partum period is the point of highest motivation for family planning and therefore the best occasion for providing family planning information and service[1].

The programme, however, got its thrust from external support coming from Norwegian Aid. As a result, in 1971, a change of coverage was envisaged from nearly two hospitals to all the major hospitals in the country which totalled, at that time, to about 550. However, this number doubled in 1981 with the second phase of the programme which extended to cover hospitals at the sub-district level, smaller institutions. Gradually, however, the focus and philosophy of the post-partum programme shifted from the "provision of family planning counselling and services during the post delivery period, to a package of MCH services scheduled from conception to some time well after birth"[2].

Financial issues

The post-partum programme from its inception and until 1995 remains a centrally funded programme. However, it is implemented by the state health authorities. The basic funding mechanism thus involves finance for a package of inputs extended by the Union Health and Family Welfare authorities.

Broadly speaking, the central funds are meant for the provision or construction of facilities such as an operation theatre and sterilisation ward, an ambulance, staff, equipment of various kinds (audio-visual, surgical, medical and office equipment) as well as funds to meet operating/maintenance costs. For each of these items detailed

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criteria, however, have been laid down by the central authorities[3,4]. Though no sanction under the post-partum programme comes from the Central Government to provide for incentive payments to acceptors of family planning methods including sterilisation, in practice, state and local governments have been spending funds on this count.

The basic issues in the financing of the post-partum programme involve the following questions:

1. What is the degree of utilisation of the funds allocated for the post-partum programme?
2. What is the mechanism for the flow of funds to individual Post-partum Centres (PPCs) within a district?
3. If the PPC is being considered a separate identity having its own funding, aims and targets, are the funds being channeled efficiently to targeted institutions?
4. Is there awareness about the entitlement of inputs at the PPC level?
5. Do the states use the inputs actually aimed at the post-partum programme as an alternative or complementary to the locally funded inputs for family welfare/MCH activities?

The following sections present a discussion relating to these issues.

The existing scenario

There is, in general, a change in the trend of expenditure on the post-partum programme from the earlier years. Until 1988-89, as noted by the Government of India/NORAD review team, the expenditure on the post-partum programme at the sub-district level has been usually falling short of allocations[2]. However, in 1989-90, one observed a substantially higher expenditure in relation to the allocations as can be observed from Table 1 which presents the allocation and expenditure for the post-partum programme from 1981-82 to 1989-90. In fact, the financial constraints are stated to have been the cause of the setting up of a fewer number of PPCs as against the number targeted during the Seventh Plan Period[5].

TABLE 1

All India Hospital Post-partum Programme: expenditure allocation vs. actuals

Year	Rs. in millions		
	Allocation	Expenditure	%
1981-82	3.00	5.20	173.3
1982-83	5.00	3.20	64.0
1983-84	13.61	6.29	46.2
1984-85	37.50	26.15	69.7
1985-86	39.85	46.83	106.1
1986-87	87.10	65.79	75.6
1987-88	147.20	86.71	57.8
1988-89	150.00	111.80	74.5
1989-90	120.00	183.30	152.8

Source: Government of India, All India Hospitals Post-Partum Programme (Sub-district Hospitals), Annual Report, 1989-90, New Delhi.

Further, quarterly reports available from 85.6 per cent or 420 of the PPCs only, indicate that the overall position of staff, in relation to the requirements has gone up to 76.1 per cent (in 1989-90) from the previous year's figure of only 48.1 per cent (Table 2).

With respect to the allocation of funds, the picture for the state of Rajasthan has been in line with the emerging trend of rising expenditure at the all India level. This is witnessed from its increased allocation in the year 1990-91 which amounts to Rs.13.060 million. The increase in the allocated amount from the previous year for Rajasthan is the highest in the statewise breakup (Table 3). Simultaneously, for Rajasthan, there has been no gap between the number of sub-divisional PPCs as approved by the Central Government and those sanctioned by the State Government.*

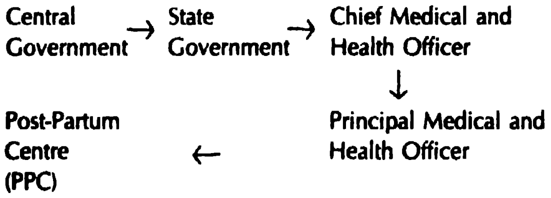
TABLE 2
Staff required vs. in position

Category of staff	1988-89			1989-90		
	R	P	%	R	P	%
Gynaecologist	461	192	41.2	420	289	68.8
Paediatrician	461	204	44.3	420	284	67.6
O.T. Nurse	461	230	49.9	420	333	79.3
L.H.V. 461	461	226	49.0	420	323	76.9
ANM/Nurse Midwife	461	254	55.0	420	360	85.7
Lab. Technician	461	222	48.2	420	310	73.8
FW Worker (Male)	461	207	44.9	420	307	73.1
Store Keeper-cum-Clerk Accountant	461	217	47.1	420	329	78.3
Driver	461	234	50.8	420	325	77.4
O.T. Attendant	461	232	50.3	420	337	80.2
Total	4610	2218	48.1	4200	3197	76.1

R - required; P - in position.
Source: Same as Table 1.

The present notion of the post-partum programme and the system of funding in Rajasthan

As per the existing system of resource transfer, the funds received from the Central Government are channeled to the PPCs as shown in the chart below.


Central Government
State Government
Chief Medical and Health Officer
Principal Medical and Health Officer
Post-Partum Centre (PPC)

This chain of funding, in fact, undermines the separate financial identity of the PPCs from the existing family welfare/MCH (FW/MCH) services. This becomes obvious if we consider some of the other pertinent features in this regard. First, the original allocation of inputs does not involve any provision for separate supportive staff including accounting personnel.** As a result, the accounts of PPC funds are also centered at the level of the PMO's office. Second, this kind of non-separate accounting at the PPC level substantiates the notion of the PPC as being an additional input to the main FW/MCH centre since the funds for both of these are jointly allocated at the PMO's level only.

Third, the absence of separate accounting personnel at the PPC level is accompanied by a lack of awareness of PPC officials regarding the eligibility of various financial inputs and other financial aspects relating to their PPC. At the same time, the need to maintain accounts in an appropriate format is altogether bypassed.*** Fourth, the system,

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During the period 1980-89 covering four phases of post-partum programme, the percentage shortfall in the number of sub-divisional PPCs sanctioned by the State government and those approved by the Central Government has been as follows: 15.38, 6.67, 20.37, 16.66, 50.00, 10.93, 6.25, 25.71, 66.67, 50.00, 17.14, 33.33, 25.00 and 13.52 for Andhra Pradesh, Assam, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Punjab, Sikkim, Tripura and Uttar Pradesh respectively.

There is, of course, provision for a joint post of Store-keeper clerk-cum-Accounts clerk, but a separate post for an accounts person does not exist.

This lack of awareness about the eligibility of various financial inputs at the PPC level was confirmed by our visit to various PPCs in Jaipur, Ajmer and Jodhpur districts.

TABLE 3
Statewise budget allocation for 1990 – 91:
All India Hospitals Post-partum Programme
at sub-divisional level hospitals

Rs. in millions

State/U/T.	Allocation for	
	1989 – 90	1990 – 91
Andhra Pradesh	7.170	7.220
Assam	3.250	3.272
Bihar	5.500	5.538
Gujarat	6.630	6.676
Haryana	2.640	2.658
Himachal Pradesh	2.130	1.544
Jammu & Kashmir	1.510	1.020
Karnataka	7.760	7.814
Kerala	7.250	7.300
Madhya Pradesh	8.060	8.116
Maharashtra	6.610	5.156
Manipur	0.390	0.392
Meghalaya	0.100	0.100
Mizoram	0.440	0.443
Nagaland	0.100	0.500
Orissa	6.780	6.827
Punjab	3.260	3.282
Rajasthan	12.970	13.060
Sikkim	0.310	0.312
Tamil Nadu	9.800	9.868
Tripura	0.500	0.503
Uttar Pradesh	19.700	19.849
West Bengal	5.580	7.597
Arunachal Pradesh	0.250	0.251
Goa	0.300	0.302
A & N Islands	0.060	–
D & N Haveli	0.060	–
Union Territory of Delhi	0.040	1.600
Lakshadweep	0.060	–
Pondicherry	0.390	0.040
TOTAL	120.000	121.240

Source: Same as Table 1.

in general, rests on procedures involving minimal purchases at the PPC level and reimbursing the same from the state directorate. And lastly, with the kind of joint accounting procedures prevalent at the PPC level and between its parent hospital, the degree of alternating the use of funds between the FW/MCH programme and post-partum programme by the state authorities, becomes quite ambiguous.

Factors influencing the present system

In order to know about the factors influencing the present system, we focussed on information for PPCs functioning in the three districts of Rajasthan. These included the districts of Ajmer, Jodhpur and Udaipur. Our analysis of the information from these districts throws useful light on some of the aspects that are pertinent for the present system.

First, one finds that trends at state level aggregates as well as district level disaggregates depict nearly the same picture. Except for the last one or two years, the expenditure during the past five years, namely from 1986-87 to 1990-91, has been less than the budgetary allocations (Table 4)+. Further, though the gap between actual and allocated funds has not been substantial, the reasons for their discrepancy lie in inaccuracies in the demands for funds placed by the PPCs to their respective Principal Medical Officer's or Chief Medical & Health Officer's office.

This inaccuracy creeps in due to factors which become clear from an item-wise break-up of the total budgetary expenditure (Table 4). Thus, across individual expense items, 'salaries' occupy a major share of the expenditure of the PPCs. Further, in this regard, Ajmer district depicts that the 'salary' component not only comprises a significant proportion of the total expenditure but in the three years namely 1986-87, 1988-89 and 1990-91, it has even exceeded

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+ These exception are true, for instance, for the year 1988-89 in Ajmer, for the years 1986-87 and 1987-88 in Jodhpur, and for the years 1986-87, 1988-89 and 1990-91 in Udaipur.

TABLE 4
PPC buget allocation and expenditure for Ajmer, Jodhpur and Udaipur (percentages)

Particulars	1986-87		1987-88		1988-89		1989-90		1990-91	
	ALC	ACT	ALC	ACT	ALC	ACT	ALC	ACT	ALC	ACT
AJMER:										
Salaries	84.97	86.31	86.95	87.39	78.95	63.16	87.30	87.16	89.88	90.42
TA/DA	1.89	2.17	3.05	2.78	2.41	1.61	2.63	2.65	3.35	2.07
Exp. on staff medical	0.27	0.36	1.67	1.56	0.89	0.60	1.05	1.06	0.94	0.84
Office exp.	3.06	2.99	2.59	2.62	3.17	2.52	3.15	3.18	2.82	2.82
Machinery eqp.	1.08	—	0.45	0.38	1.90	—	—	—	0.47	—
Cloth & beds	5.13	5.16	4.34	4.40	3.62	2.97	3.00	3.07	2.68	2.68
Maintenance exp. of vehicle	2.70	2.17	—	—	1.90	0.60	1.57	1.59	0.47	0.47
Matrs.& supplies	0.90	0.81	0.91	0.85	0.76	0.70	0.63	0.63	0.47	0.47
Drugs & medicines	—	—	—	—	0.27	1.00	0.63	0.63	0.18	0.18
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
JODHPUR										
Salaries	67.52	89.97	78.02	72.78	75.00	74.77	81.30	85.11	87.72	87.87
TA/DA	2.14	1.04	2.18	1.35	1.25	1.25	1.63	1.70	2.51	2.53
Exp. on staff medical	2.14	1.04	8.54	1.35	0.63	0.62	0.81	0.85	1.25	1.26
Office exp.	4.27	2.08	3.27	2.43	1.87	2.18	2.44	2.55	2.51	2.53
Machinery eqp.	12.82	1.73	2.73	1.35	3.13	3.11	3.05	—	0.63	0.63
Cloth & beds	1.28	0.35	0.54	0.27	1.25	1.25	0.81	—	0.25	—
Maintenance exp. of vehicle	1.71	1.38	5.18	15.9	11.87	11.84	5.69	5.96	3.63	3.67
Matrs.& supplies	6.41	1.73	5.45	4.04	3.13	3.11	3.05	2.55	0.87	0.88
Drugs & medicines	1.71	0.69	1.09	0.53	1.87	1.87	1.22	1.28	0.63	0.63
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
UDAIPUR										
Salaries	72.50	88.52	89.19	85.05	86.85	88.22	85.36	86.01	89.50	87.76
TA/DA	1.73	1.94	0.49	1.73	1.73	3.52	1.70	1.07	3.70	2.13
Exp. on staff medical	1.73	1.94	0.73	1.04	0.77	0.47	0.85	0.86	1.91	1.69
Office exp.	3.71	2.91	0.36	1.38	1.73	1.05	1.70	1.72	2.68	3.13
Machinery eqp.	1.23	0.97	1.22	1.56	2.89	1.05	2.66	1.61	0.63	0.31
Cloth & beds	0.98	0.19	0.24	1.56	1.73	1.05	0.85	2.15	0.25	0.12
Maintenance exp. of vehicle	0.98	0.77	2.33	4.33	1.54	2.94	2.66	3.22	0.80	2.94
Matrs.& supplies	7.17	1.94	3.06	2.60	1.93	1.17	2.66	2.47	0.63	0.31
Drugs & medicines	9.89	0.77	2.33	0.69	0.77	0.47	1.49	0.86	0.63	1.56
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Budget documents.
ALC - Allocated amount; ACT - Actual amount.
Because of rounding off to the second decimal place, some percentages may not add up to 100.

the allocated budget. This is also true for Udaipur where the excess of actual expenditure over the budget allocation for 'salaries' occurs in 1986-87 and 1988-89. In fact, the same, has been found in the case of Jodhpur during three years. Simultaneously, related to the expenditure on 'salaries', the item on 'expenditure on TA/DA' also shows a general tendency for actual amounts to exceed allocated amounts. This is evident from Udaipur district during the three years namely, 1986-87, 1987-88 and 1988-89. A similar trend is visible in Ajmer district for the year 1986-87.

The trends of these two items, namely expenditure on salary and TA/DA, thus, indicate the likelihood of a discrepancy in the deployment of staff in relation to its requirement in different categories. The existing situation, in fact, corroborates this. At some places, for instance, in order to fill the vacancy caused by the non-availability of a particular specialist or created by a staff member leaving the PPC, an adjustment is generally made by utilising the services of a specialist working in the base hospital. In the process, sometimes personnel other than those with the requisite specialisation background are deployed. Thus, for instance, instead of a gynaecologist or paediatrician being deployed, one would even find an ophthalmologist for instance, in some places. However, such an adjustment, namely the utilisation of a specialist/consultant's services from the base hospital is done by adjusting the salaries of the deputed staff against the PPC account. This is consequently reflected in a diversion in the actual estimates of the 'salary' component from the demanded or allocated one.

Besides, at times, temporary staff recruited during a financial year are not taken into account while formulating the demand for funds. This also leads to a discrepancy in the upward direction. At the same time, such practice of deployment of temporary staff has also resulted in fluctuations of expenditure on staff's medical reimbursement (Table 4). Similarly, the discrepancy in planning and implementation of field trips by the PPC staff also adds to differences between demanded vs. actual estimates.* In contrast to accounting adjustments from the PPC to the base hospital, a remarkable tendency at the PPC level to adjust central funds meant for family welfare activities is observed. As mentioned earlier, apparently the central funds are not given for providing incentives to acceptors of sterilisation[2]. However, in practice, when family welfare camps are organised at the PPC, the incentives given to acceptors by the Central Government are utilised and marked under the accounts of the PPC. Such a practice, thus, provides another way of mixing the two programmes in the financial accounting sense.

Conclusion

While studying the financial issues involved in the All India Hospital Post-Partum Programme, this paper makes some pertinent observations based on the latest trends

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Unlike these factors, however, in the case of drugs and medicines as well as for materials and supplies, generally there has been less spending as compared to the allocated amount (Table 4). This suggests that the targets have been either not achieved in these districts or that there has been an economy the use of these resources. Among other items, in the budgetary break-up notably, one finds stability in the fixed expenditure incurred under the heading of 'office expenses' denoting thereby no appreciable change in the office establishments of the PPCs. In contrast, fluctuations in the actual expenditure in relation to allocated amounts on the items pertaining to 'clothes and beds', and 'machinery equipment' seem to be absent except for Udaipur district, and even there, the direction of the fluctuation in expenditure on these items is quite erratic.

in expenditure under the programme at different levels of aggregation, namely state, district and sub-district levels. It is observed that there has been an increasing utilisation of funds and as a result, of late, the actual expenses are beginning to exceed the allocated amounts. Generally at the state level, in Rajasthan, the PPCs are not construed as an identity separate from the existing family welfare set-up. A lack of awareness among concerned PPC officials about the eligibility of financial inputs is also noted.

The funds flow mechanism from the centre to the state and further to PPC authorities has been operating in such a manner that there has been a two-way adjustment of funds. While it is difficult to quantify the exact amount that has been used from the base hospitals for the attached PPCs or vice versa, it is evident that in some instances or on some items the funds meant for the PPCs have been utilised for the base hospital. At the same time, funds meant for family welfare activities per se have been mixed up with post-partum programme activities. In sum then, this raises doubts about the soundness of a separate financial identity for such a programme co-existing with the present FW/MCH services in the country.

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IUD provision in rural Madhya Pradesh: Results of a providers' interview and insertion practices

Dr. Balthasar Schaap

Introduction

In India, family planning is one of the main areas of concern for policy makers. It is a sensitive issue that no political party would like to emphasise. And yet, all policy makers agree that uncontrolled population growth slows down the economic prosperity of the country.

India was the first country in the world to launch a nationwide family planning programme in 1951. "Although the family welfare programme has succeeded in increasing family planning acceptance in the country, the impact of the programme, measured in terms of a decline in the birth rate, is modest and below the expected level" states Khan[1]. He also mentions as some of the causes, the lack of accessibility to spacing methods in remote areas, poor quality of services measured in terms of availability and choice, inadequate counselling and follow-up, incompetence of workers, and a poor client-provider relationship.

The Eighth Five Year Plan document of the Government of India states: "The younger couples, who are reproductively most active will be the focus of attention, with necessarily a greater emphasis on spacing methods, although the terminal methods will continue to remain an important means of birth control"[2].

The spacing methods available in the current family welfare programme are the intrauterine device, oral pill and condoms. In India, the effective couple protection rate is calculated by using the following assumptions: one case of sterilisation equals three IUD insertions, equals nine oral pill users, equals 18 condom users[3]. This means that when the emphasis is shifted from the propagation of terminal methods to spacing methods, the IUD is considered to be the most reliable method.

IUD insertion in rural India is performed by paramedical personnel in 93 per cent of the cases. They are not well trained in the

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insertion technique and often insert in difficult circumstances in the beneficiary's home, resulting in a continuation rate of 54 per cent after one year[4].

Against the background of the Government's thrust on the IUD programme and the high discontinuation rate, it was considered worthwhile to study the insertion skills of IUD providers with a view to obtaining useful information for strengthening the IUD programme.

Methodology

In May 1992, a total of 38 IUD service providers—30 Multipurpose Workers/Female (MPW/F) and eight Health Assistants Female (HA/F)—in Datia District, Madhya Pradesh were interviewed, using a pre-designed questionnaire. The questionnaire was filled out by trained interviewers who were female interns of Gwalior Medical College.

In June 1992, a training course was organised for the IUD service providers with an emphasis on correct insertion skills. A dummy was used to assess the actual insertion practices. Pre-course insertion skill observation forms were used to record the prevailing practices.

Results

All the IUD service providers were fluent in Hindi, although two reported Marathi and Punjabi as their mother tongue. Over three-fourths (77 per cent) had passed the 12th class or had attained higher education. About three-fourths (76 per cent) of the providers were female Multipurpose Workers and the remaining (24 per cent) were female Health Assistants. The former had an average of 4½ years of service in their actual place of work, while the latter had served almost twice as long (8½ years). Their place of work was the sub health centre (section level): 66 per cent; sector headquarters (sector level): 21 per cent; community health centre (block level): 5 per cent, and hospital (district level): 8 per cent.

The large majority (84 per cent) of the service providers were married. Thirteen per cent of the remaining were single and three per cent were widowed. The average age of the MPW/Fs was 31 years and that of the HA/Fs, 40 years. The service providers had two children, on average, with the youngest child being two and half years old. Over half of them used a family planning method (54 per cent), the method of choice being sterilisation: 27 per cent; IUD (Copper T): 16 per cent; condom: 8 per cent, and the pill: 3 per cent. As many as 46 per cent were not using any method. Most of the providers were of the opinion that the IUD is a good spacing method (87 per cent). Only two said that they would not like to use an IUD; one because of fear of side effects, and the other because of unacceptable bleeding that had been caused by two previously inserted IUDs.

IUD training and insertion experience

Specific training in IUD insertion had not been received by 34 per cent of the MPW/Fs while two of the nine HA/Fs had never attended a training course on this subject. Those who had attended a course had attended, on average, 21 IUD insertions during their course, and had performed about five IUD insertions under supervision. Most of them (92 per cent) expressed confidence when asked if they were able to perform an IUD insertion. The MPW/Fs reported an average of 28 IUD insertions per year as compared to 39 by HA/Fs. Only 34 per cent of the providers reported that they had faced some problems such as pregnancy; bleeding, paid and/or weakness; non-accessibility of the cervical canal; lack of instruments; lack of medicines for treating complications or side effects, and lack of knowledge about the IUD and female anatomy.

Knowledge

The contraindications for IUD use were not very clearly known to the service providers as indicated in Table 1 which presents the selection criteria as reported by the serivce providers. Some of the contraindications mentioned by them such as grand multipara, hypertension, tuberculosis, jaundice and cardiac problems point to the need for providing them with accurate information. In particular, the belief that after four or five children the IUD is contraindicated was a shared piece of misinformation.

TABLE 1
Selection criteria for IUD use

Criterion	% service providers
A mother having one or more children	43
A woman below 40 years of age	24
A woman willing to prevent a pregnancy (temporary)	18
No contraindications	8
No other method acceptable	7
Total	100

The side effects of the IUD were well-known to the service providers. However, they were not equipped with the knowledge and medicines to deal with side effects effectively.

The advantages of the IUD as reported by the providers are given in Table 2.

The appropriate follow-up mentioned was: a home visit within three days and contacting the service provider in the event of any problem. When asked about the actual life-span of the Copper-T, 78 per cent mentioned three years, which is the Indian recommendation in contrast to Europe and the US where it is four years for the same device.

The providers' opinion on steps to improve IUD acceptance included the provision of better health education (62 per cent), better treatment of side-effects (23 per cent), and raising incentives (14 per cent) for acceptors.

TABLE 2
Advantages of IUD use

Advantage	% service providers
The most reliable spacing method	32
The device can be removed when needed	27
The user has little responsibility	20
The procedure does not require hospitalisation	12
It is a cheap, simple and harmless method	7
Total	100

Skill test results

The major common incorrect practices observed by the service providers during IUD insertion are listed below:

1. A good history is not taken for checking contraindications for IUD insertion.
2. No vaginal examination is done because gloves are not available.
3. The IUD is put in the holder outside the packet without using sterile gloves (hand washing with soap is mostly practised).
4. Uterine sounding is not done.
5. A tenaculum is not used.
6. By and large, torches being unavailable, vision is poor, once the speculum has been inserted.
7. During insertion, the Copper-T is pushed into the uterus by pushing the plunger.
8. A sanitary pad is not provided to the client after insertion.

Discussion and Conclusion

The main providers of IUD services are paramedicals, the Health Assistant (female) and Multi Purpose Worker (female). They are ill-prepared for their family planning task and often not competent to deliver good quality of IUD services. Their training in IUD provision is often theoretical and includes very little on-the-job skill training. This has resulted in a service delivery that is sub-standard and might have contributed to the low acceptance of the Copper-T.

The following measures are suggested in order to restore the people's confidence in the benefits of the Copper-T which, nevertheless, are very well known to the service providers.

1. Correct training of service providers with an emphasis on:
   - adequate counselling of women who want to prevent pregnancy
   - proper selection of acceptors
   - skill training in IUD insertion technique, and
   - follow-up services including treatment of side-effects.
2. The supply of adequate materials and drugs for correct insertion and follow-up services.

Two indicators can be used to monitor the output of a programme with emphasis on quality care with regard to IUD services.

1. *Quantity:* The number of IUD acceptors as compared to the total number of acceptors of family planning methods.

2. *Quality:* The continuation rate of the acceptors (the one year continuation rate is the most commonly used indicator).

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The status of women, fertility and family planning among tribals of South Rajasthan

Dr. Vinit Sharma and Ms. Anuragini Sharma

Introduction

The status of women in many parts of rural India is low. The situation is even worse among tribal communities or primitive societies which constitute approximately 7.5 per cent of the total population of the country[1]. In such societies, which still lead an isolated existence, far removed from the modern way of life, a wife is primarily regarded as an investment for production of labour and a childbearing housekeeper. In such societies, male dominance is a rule, and preference for a male child, a traditional compulsion. Women are considered too inferior in status to voice their views and concerns even in matters which have a direct bearing on their own health and well-being. Family elders and caste leaders reign supreme in the decision making processes and prehistoric practices and primitive rituals and customs are still very prevalent[2-5]. Consequently, such societies are typically characterised by uncontrolled fertility and very high maternal and infant mortality rates[6-7].

The concept of the interrelationship between the social status of women and fertility, though well-established by deductive reasoning, has aroused considerable scientific debate and controversy in the past, for the mere reason that research workers had not attempted to quantify the status of women in numerical terms[8-13]. Moreover, a number of vital medical parameters with social causes and consequences had been omitted in such computations. In the present study, an attempt has been made to develop a comprehensive socio-medical scale to measure the social status of women and to study fertility behaviour and family planning practices among tribal communities.

The scale was developed by taking into consideration a number of social and medical parameters such as the height and weight of adult women, their educational status, age at marriage, number of children possessed and desired, preference for male children, nutritional deficiencies (especially prevalence of anaemia and night blindness), the utilisation of health care services such as antenatal care, family planning pracice, and so on.

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Sample and Methodology

The study was conducted in the Udaipur district of Southern Rajasthan, which has a high concentration of tribals. Out of the 18 Community Development Blocks in the district, nine are Tribal Development Blocks which are included under the tribal subplan. By the process of simple random sampling, four of the Tribal Development Blocks were selected for the study. A list of the villages in the selected tribal blocks was obtained and six villages from each of the selected Tribal Development Blocks were chosen to form the sampling frame of the study. We thus had a list of 24 villages with a high concentration of tribal population. However, we were compelled to include one more village in the study during the time of survey because of a request from the local leaders of that village to whom the inclsion of their village in the study was a matter of prestige.

Based on the objectives of the study, all the female opinion leaders and wives of male opinion leaders from the 25 sample villages were included. For the purpose of the present study, the definition of opinion leaders proposed by Rogers[14] was adhered to, wherein opinion leaders have been defined as, "those individuals from whom others seek information, guidance and advice", and the sociometric method of identification of opinion leaders was followed[15-16].

The rationale for selecting the female opinion leaders and or the spouses of male opinion leaders for this study was that opinion leaders represent the local elite whose advice is often sought by the community. They are a mirror of the socio-cultural practices of the community, since the general population of the area tends to follow and copy their lifestyles and patterns of social behaviour. Furthermore, a study of opinion leaders obviates the necessity of stratification of the population sample according to religious, socio-economic or cultural characteristics.

Based on the above inclusion criteria, a total of 182 female opinion leaders/spouses of opinion leaders could be enlisted for our study. Out of these, 83 (45.6 per cent) had received a short-term orientation training in family planning organised by the Government of India through the local primary health care set up. These respondents were assigned to Group A of the study, while the remaining 99 had not received a formal training in family planning and were included in Group B.

Data regarding the age, socio-economic status, educational background and other relevant general characteristics of the respondents were collected by means of a pretested, structured interview schedules. Additionally, the social status of these women was determined by scoring on a five-point equidistant scale (Appendix I). We also calculated the bias in favour of the male child in the study groups.

Results and Discussion

The present study was carried out in 25 remote villages with a high percentage of tribal population. Most of the villages do not have proper transport facilities and the majority of them are cut off from the rest of the world during the rainy season. In these villages while even the bare necessities of life like food and adequate clothing are scarce, water and electricity are unaffordable luxuries. A large majority of the population is illiterate and poverty is rampant.

Table 1 presents the socio-demographic profile of the respondents.

It was observed that almost all (95.4 per cent) the respondents were illiterate as against 31.3 per cent of their husbands who were also illiterate. A large majority of them were less than 45 cms. in height (90.3 per cent) and less than 38 kg. weight (70.0 per cent), thus pointing to chronic undernutrition and inadequate care received dur-

TABLE 1
Socio-demographic profile of respondents

Parameter studied	Group A	Group B
Number	83	99
Mean age (in years)	46.7	52.3
Number of members per family		
1	6 (7.3)	11 (11.1)
2 - 5	8 (21.6)	26 (26.3)
> 5	58 (71.1)	62 (62.6)
Average family size	5.7	5.9
Desired number of children		
2	20 (24.1)	31 (31.3)
3	58 (69.9)	59 (59.6)
> 3	5 (6.0)	9 (9.1)
Age at marriage		
< 14 years	29 (34.9)	34 (34.3)
15 - 19 years	47 (56.7)	59 (59.6)
> 20 years	7 (8.4)	6 (6.1)
Age at birth of first child		
14 - 16 years	17 (20.5)	22 (22.2)
17 - 19 years	46 (55.4)	58 (58.6)
> 20 years	20 (24.1)	19 (19.2)
Age of youngest child		
< 5 years	15 (18.1)	21 (21.2)
6 - 10 years	56 (67.5)	47 (47.5)
> 21 years	12 (14.4)	29 (29.3)
Mean social status score	15.2	14.1

* 2 couples had no children.
Weighted mean of both groups - 14.60 (social status of women). Figures in brackets denote percentages.

ing their childhood and adolescent years. Moreover, more than 92 per cent of them were found to be suffering from moderate to severe anaemia and almost 33 per cent of them showed evidence of varying degrees of vitamin A deficiency.

These clinical manifestations reflect the current nutritional status of the women in the study, and are in accordance with the findings of earlier studies carried out among tribal populations[5,17]. Malnutrition among tribal women has a multifactorial aetiology with its roots embedded deep in the tribal psyche. To the tribals, who are faced with abject poverty, a young woman is more importantly an earning member of the family and hence a vital asset. Pregnant tribal women are compulsorily underfed under the notion that overfeeding or even proper feeding of the pregnant mother will result in a healthy, large baby, and thereby to prolonged and difficult labour. Such a myth has forced the tribals to underfeed pregnant mothers in the hope that the baby will be small and hence easily delivered[5,17]. Earlier studies[17,18] in this population, have also reported that a larger percentage of the girl children were suffering from moderate to serve degrees of malnutrition (62 per cent) as compared to male children (38 per cent).

Another important factor which has been documented as having a direct and significant bearing on the fertility of a couple is the age at marriage[11]. In our study we found that quite a large number of the respondents (35.0 per cent) had been married even before attaining the age of 4 years, and not surprisingly, almost 21 per cent of them had given birth to their first child when they were between 14-16 years of age.

In rural India, a large number of girls are married off before their 15th birthday inspite of legislation prohibiting the marriage of girls before 18 years of age. In tribal communities, it is customary to marry children at any time during their childhood and some parents even indulge in anticipatory marriages, even before the birth of their children[5,19].

Fertility and family planning

Table 1 also indicates that irrespective of their family planning training, the average family size was over 5 children, being slightly higher (5.9) among respondents who had not received such training as compared to 5.7 among those who had. Similarly, on the basis of the number of children desired and actually possessed by the respondents, we were able to calculate a clear-cut bias of the magnitude of 13 times (461: 36.14) in favour of the male child (Table 2).

TABLE 2
Preference for male child expressed by the respondents

Parameter studied	Group A	Group B
No. of living male children	(200)	(230)
1	10	8
2	42	49
> 2	31	40
No. of male children desired	(209)	(241)
1	8	3
2	57	61
> 2	18	33
No. of living female children	(187)	(213)
1	31	38
2	29	33
> 2	23	26
No. of female children desired	(80)	(86)
1	80	86
2	—	—

Bias in favour of the male child – 461 : 036.40 (Approx. 12 times). Figures in brackets indicate the cumulative total for the group.

None of the respondents interviewed by us desired more than one female child in their families, whereas over 61 per cent expressed a preference for at least two male children and 21 per cent desired more than two male children. The centuries old concept of a male child being the cause and medium of salvation still appears to dominate tribal thoughts and consequently, female children are mostly neglected and underfed. In such societies the birth of a son is a matter of great jubilation and a family is considered incomplete, and the mother a down-trodden, worthless creature without the birth of a son.

Additionally, we also tried to inquire about the age of the youngest child of the respondents. Surprisingly, the youngest child of about one-fifth of the respondents was less than five years of age, thereby indicating that most of them had themselves been actively reproductive up to the very time of menopause. Such a trend was evident in both the groups, their training in family planning notwithstanding. Furthermore, barring a few exceptional cases, none of the interviewed women had ever availed of antenatal care and most of the deliveries had been conducted by untrained traditional birth attendants at home.

Most of the respondents felt that they had no say, whatsoever, in decision making within the family. Similarly, almost all of them said that they had not inherited anything (and were not likely to get anything) from the ancestral property of their parents. Both these factors point to a degradingly low status of women in this society and it was surprising to note that even in matters like family planning, the method of contraception to be adopted by the couple, utilisation of antenatal care services, etc. which are all known to have a direct effect on the health and wellbeing of women, the women had to depend on the decisions of their husbands or even their mothers-in-law.

The practice of family planning and the use of modern contraceptives has been known to be non-existent among tribal people[3, 5, 18]. In our study as well, we observed that irrespective of the training in family planning received by about 46 per cent of the respondents, they themselves or their spouses were not using any method of contraception. This significant credibility Gap or KAP-Gap[20, 21] can only be explained by the low status of women in these societies. Tribals have been reported to depend on certain indigenous methods for family size limitation and our respondents also described a number of primitive and/or herbal-based methods of family planning with yet unproved efficacy or safety[3, 5].

The study is thus an attempt to highlight the low status of women based on computations of a number of medico-social factors in a primitive tribal community in India and reaffirms that the status of women is a very important factor which governs fertility and family planning attitudes and practices in a community. In order to make any family planning programme a success it is imperative that the status of women is improved so as to give them the power to decide their own destiny and the destinies of their families[22].

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APPENDIX I
Status of woman scale

Parameter studied		Score
01. Female literacy	a. Illiterate	0
	b. Primary school education	1
	c. Secondary education	2
	d. Graduate	3
	e. Postgraduate	4
02. Preference for male children	a. All male desired	0
	b. Not more than one female desired	1
	c. At least two male children	2
	d. At least one male child	3
	e. No preference	4
03. Involvement in decision making in family	Own perception of respondent	0–4
04. Age at marriage	a. Less than 12 years old	0
	b. 12 – 15 years	1
	c. 15 – 18 years	2
	d. 18 – 20 years	3
	e. 20 years and above	4
05. Inheritance of	a. Property distributed to parental property distant male relations if no male children are present, no share to own female children	0
	b. No share to female child, all the property given to male children only	1
	c. Token gift to female child	2
	d. Cash and kind divided among male and female children, but land only to male child	3
	e. Equal share of male and female children	4
06. Height and weight of	a. Both height and weight adult females less than average	0
	b. Either height and weight less	1
	c. Average height/weight	2
	d. Either height/weight more other parameter average	3
	e. Both height and weight more than average Indian female	4
07. Prevalence of malnutrition in female children	a. Malnutrition Grade IV	0
	b. Grade III	1
	c. Grade II	2
	d. Grade I	3
	e. Normal	4
08. Antenatal care	a. No antenatal care	0
	b. One parameter +	1
	c. Two parameters +	2
	d. Three parameters +	3
	e. Adequate antenatal care (All criteria fulfilled)	4
09. Prevalence of anaemia	a. Hb less than 7 gm %	0
	b. 7 – 8 gm %	1
	c. 8 – 10 gm %	2
	d. 10 – 12 gm %	3
	e. more than 12 gm %	4
10. Vitamin A deficiency	a. X 3 B	0
	b. X 3 A	1
	c. X 2	2
	d. X 1 A	3
	e. Normal	4

Other parameters which could have been included:

A. Maternal mortality rate
B. Infant mortality rate
C. Contraceptive prevalence rate
D. Percentage of low birth weight, small for date, still births or premature births
E. Immunisation rates among male and female chidlren
F. School dropout rates among male and female children
G. Life expectancy at one year for males and females

Husband-wife communication and fertility among two sects of Brahmins

Dr. (Ms.) D. Sai Sujatha and Dr. M.S.R. Murthy

Introduction

Husband-wife communication is one of the significant factors which influences the fertility behaviour of couples. Improved communication between the spouses is a predictor of the closeness of the conjugal relationship and has been known to affect fertility. Many studies have reported a positive relationship between husband-wife communication and family planning use, and a concomitant negative relationship between inter-spousal communication and desired fertility[1-4]. The effect is more so if the partners have some education[5]. Sivaraju[6] found that inter-spousal communication on family planning was greater among adopters than among non-adopters of contraception in his study of the coastal and Rayalaseema regions of Andhra Pradesh state.

All these studies have been cross-cultural in nature. Since community studies provide better information as members of the same community have many similarities, an attempt was been made to examine the impact of husband-wife communication on fertility among two sects of Brahmins controlling for women's education, which has been found to influence both husband-wife communication and fertility to a greater extent than other socio-economic variables.

Sample and Methodology

Two sects of Brahmins, Vaidiki and Niyogi Brahmins, were selected for the study, in view of the anticipated fertility differential among them. The Vaidiki sect is more orthodox and its members follow various traditional customs and religious practices, while the Niyogis have more modern values and consequently, are more influenced by modernisation and changing cultural patterns.

The sampling unit for the study was an eligible couple from the Vaidiki and Niyogi sects of Brahmins, who had one or more living children, and the wife was in the reproductive age group of 15-49 years. A sample of 375 eligible couples each belonging to the Vaidiki and Niyogi sects was selected from Tirupati, Nellore and Vijayawada towns of Andhra Pradesh, by the

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stratified multistage random sampling procedure. Thus, the total sample consisted of 750 eligible couples. The effect of inter-spousal communication on fertility was studied by administering a schedule containing questions on communication between spouses on issues such as the purchase of household items, education of children, family affairs, financial matters, family planning methods and sexual matters.

Results and Discussion

Table 1 presents a distribution of the couples of both sects by mean number of live births in relation to husband-wife communication on the purchase of household items (Panel A), education of children (Panel B), financial matters (Panel C), other family affairs, i.e other than those stated above (Panel D), family planning (Panel E) and sexual matters (Panel F). To begin with, as expected, the wives of the more orthodox Vaidiki Brahmin couples were found to be less educated than those of their more progressive Niyogi counterparts (Vaidikis: illiterate—34.1 per cent; secondary level—52.0 per cent; college level—13.9 per cent as compared to Niyogis: illiterate—8.0 per cent; secondary level—38.9 per cent; college level—53.1 per cent). Further, the Vaidiki couples also had 1.56 more mean live births than the Niyogi couples.

Among all the six issues, the purchase of household articles was most discussed by all couples (not discussed by 4.0 per cent of Vaidiki and 0.8 per cent Niyogi couples) and family planning was least discussed (not discussed by over half—53.0 per cent of Vaidiki and 12.0 per cent Niyogi couples) (Table not given). Further, inter-spousal communication was greater among the more modern Niyogi couples as compared to Vaidiki couples, on all but family affairs irrespective of the issue discussed. Thus, the percentage of couples who had not discussed the other five issues ranged from 18.1 to 27.2 among the Vaidiki couples, while among the Niyogis except for 18.7 per cent who had not discussed family affairs, only a marginal 2.4 per cent had not discussed the other issues.

As far as the degree of inter-spousal communication was concerned again, more Niyogi couples reported to have had frequent discussions on all the six issues as compared to the traditional Vaidiki couples, more of whom reported to have had occasional discussions on them. Thus, as suggested by Table 1 (percentages not given), say for example in the case of children's education (Panel B), the majority of Vaidiki couples reported occasional rather than frequent discussions (63.4 per cent and 15.2 per cent respectively, while in the case of Niyogi couples it was the reverse—frequent discussions were reported by 78.7 per cent and occasional discussions by 18.9 per cent. The pattern was similar in the case of all the other communication variables including family planning and sexual matters.

Table 1 also indicates that fertility was negatively related to the degree of inter-spousal communication. Couples of both sects among whom no communication existed, reported a greater number of mean live births than those who discussed these topics frequently. Thus, for example in the case of children's education, Vaidiki couples who did not discuss their children's education reported 4.50 mean live births, those who occasionally discussed it reported 3.70 mean live births, and those who had frequent discussions reported 3.08 mean live births. The corresponding values for Niyogi couples who generally reported a greater degree of inter-spousal communication, were lower: 4.00, 3.25 and 1.92.

This pattern was repeated in the case of all the other topics of husband-wife communication studied. The largest difference

TABLE 1

Distribution of Vaidiki and Niyogi Brahmin couples by mean live births in relation to husband-wife communication on various issues controlling for wife's education

Communication on	Vaidiki Brahmins				Niyogi Brahmins			
	Illiterate/ Primary	Secondary	Collegiate	Total	Illiterate/ Primary	Secondary	Collegiate	Total
A. *Purchase of household items*								
Do not discuss	4.44	3.75	3.50	4.13	4.00	2.00	-	3.33
	(9)	(4)	(2)	(16)	(2)	(1)		(3)
Discuss occasionally	4.29	3.60	3.30	3.86	3.40	3.10	2.98	3.10
	(110)	(167)	(18)	(295)	(39)	(39)	(54)	(112)
Discuss frequently	4.00	3.33	3.10	3.32	3.33	2.50	1.25	1.83
	(9)	(24)	(32)	(65)	(9)	(106)	(145)	(260)
B. *Education of children*								
Do not discuss	4.88	4.23	3.33	4.50	4.20	3.70	-	4.00
	(45)	(26)	(9)	(80)	(6)	(3)		(9)
Discuss occasionally	4.20	3.52	3.00	3.70	3.92	3.36	2.84	3 25
	(73)	(151)	(14)	(238)	(14)	(38)	(19)	(71)
Discuss frequently	3.80	3.33	2.68	3.08	3.20	2.76	1.36	1.92
	(10)	(18)	(29)	(57)	(10)	(105)	(180)	(295)
C. *Financial matters*								
Do not discuss	4.85	3.74	3.20	4.43	3.60	3.00	3.00	3.33
	(66)	(31)	(5)	(102)	(5)	(2)	(2)	(9)
Discuss occasionally	4.00	3.59	3.00	3.62	3.10	2.93	2.63	2.90
	(53)	(143)	(28)	(224)	(19)	(30)	(19)	(68)
Discuss frequently	3.77	3.20	2.83	3.16	2.50	2.43	1.76	2.03
	(9)	(21)	(19)	(49)	(6)	(114)	(178)	(298)
D. *Family affairs*								
Do not discuss	4.78	4.52	3.50	4.55	4.00	3.33	2.50	3.30
	(41)	(19)	(8)	(68)	(2)	(3)	(2)	(7)
Discuss occasionally	4.06	3.56	3.25	3.71	3.40	3.00	2.06	2.75
	(69)	(139)	(8)	(216)	(10)	(16)	(15)	(41)
Discuss frequently	3.88	3.37	3.08	3.36	2.88	2.52	1.78	2.13
	(18)	(37)	(36)	(91)	(18)	(127)	(182)	(327)
E. *Family planning*								
Do not discuss	4.30	4.20	3.50	4.20	3.82	3.60	3.30	3.50
	(79)	(112)	(8)	(199)	(11)	(12)	(22)	(45)
Discuss occasionally	3.80	3.20	3.10	3.35	3.50	3.30	2.94	3.20
	(45)	(79)	(31)	(155)	(12)	(50)	(31)	(93)
Discuss frequently	3.50	3.00	2.70	2.90	3.00	2.00	1.32	1.61
	(4)	(4)	(13)	(21)	(7)	(84)	(146)	(237)
F. *Sexual matters*								
Do not discuss	4.35	4.10	3.50	4.24	3.66	3.40	2.00	3.33
	(67)	(31)	(4)	(102)	(3)	(5)	(1)	(9)
Discuss occasionally	4.10	3.60	3.43	3.67	3.12	2.92	2.31	2.70
	(46)	(148)	(40)	(234)	(19)	(40)	(43)	(102)
Discuss frequently	3.33	3.12	2.50	3.20	3.00	2.12	1.85	1.99
	(15)	(16)	(8)	(39)	(8)	(101)	(155)	(264)
Total	4.25	3.60	3.15	3.78	3.43	2.66	0.72	2.22
	(128)	(195)	(52)	(375)	(30)	(146)	(199)	(375)

in the number of mean live births between couples who did not discuss the various issues and those who did so frequently, was observed in the case of inter-spousal communication on children's education among both the traditional Vaidiki and more modern Niyogi Brahmin couples (1.42 and 2.08 respectively), followed by that on family planning in both sects (1.30 and 1.89 respectively). The least was shown in the case of inter-spousal communication on the purchase of household articles among Vaidiki couples (0.81 mean live births) and family affairs among Niyogi couples (1.17 mean live births).

When the data were examined in relation to education, the wife's education was found to significantly influence both husband-wife communication and fertility. Thus, irrespective of sect or the issue on which inter-spousal communication occurred, couples constituted by wives who were illiterate or had attained primary education consistently had higher fertility (Vaidiki: 4.25; Niyogi: 3.43 mean live births) than those where the wives were secondary school-educated (Vaidiki: 3.60; Niyogi: 2.66 mean live births), who in turn, had higher fertility than couples where the wives were college-educated (Vaidiki: 3.15; Niyogi: 1.72 mean live births) (Table 1).

This effect of education was observed not only in the case of all the six communication variables, but also at each level of inter-spousal communication, that is among couples where there had been no inter-spousal communication, among those who had occasional inter-spousal communication, as well as among those who had frequent inter-spousal communication. Thus, couples constituted by wives who were illiterate or had attained primary education (Columns 2 and 6 of Table 1) consistently had higher fertility than those where the wives were secondary school-educated (Columns 3 and 7 respectively of Table 1), who in turn, had higher fertility than couples where the wives were college-educated (Columns 4 and 8 respectively of Table 1).

Summary and Conclusion

On the whole, the study reveals that communication on six items namely, the purchase of household items, education of children, family affairs, financial matters, family planning, and sexual matters, between couples of the Vaidiki Brahmin sect who had more traditional beliefs and complex cultural patterns was lower than among the more modernised Niyogi Brahmins. The wife's educational level seemed to affect both inter-spousal communication and fertility behaviour in the case of all the six communication variables. The results suggest that communication between spouses can be improved by enhancing the status of women, in particular by improving their level of education. Education would not only expose women to new knowledge about childbearing and childrearing but improve interspousal communication on various issues including family planning, thereby paving the way to contraceptive acceptance.

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A study of powerful predictors in relation to fertility preference: A discriminant analysis

Md. Aminur Rasul

Introduction

Although the concept of fertility preference and its influences are strongly debatable due to the controversy regarding its meaningfulness or face validity, convincing empirical evidence from many developing countries has compelled a number of scholars to conclude that such an attitudinal response to very specifically worded questions, though doubtless flawed by both theoretical and methodological problems, is the best available indicator of family size preference[1].

The findings related to these concepts are a reassuring confirmation that desired or ideal family size is a meaningful concept in developing countries[2,3]. Thus, the thrust of most of the research has been on desired or preferred family size as a substitute variable for eventual fertility or completed family size.[4-7] If a respondent's stated fertility preferences are related in some way to her eventual fertility, the information on fertility preference should have a predictive value in forecasting her future course of fertility,[8] and under voluntary control the desired number of children will be an increasingly important determinant of fertility[9].

Objectives

In the above perspective, this paper is an attempt to investigate discriminators and their relative discriminating powers that are believed to have different degrees of influence in distinguishing between two groups of women in relation to two fertility preference measures, namely, desire for future births and "intention to use contraception in future".

Again, regression analysis has been reported to provide a poor explanation of variation—only about 10.28 per cent in the case of desire for future births, and 9.42 per cent for total desired family size, out of which 4.06 per cent in the former and 8.81 per cent in the latter have been explained by the number of living children observed with almost the same set of factors[10]. The main purpose in the present context then is largely to identify the importance of factors rather than the explained variation.

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Another, rather important purpose is to examine the actual group membership of the women with reference to the predicted discriminant function which would combine the group characteristics in a way that would allow one to identify the group which a respondent resembles more closely. Further, such a grouping would indirectly be able to shed some light on the meaningful notion of stated fertility preferences in terms of reliability, validity and stability through behavioural implications for Bangladeshi women whose non-specific responses on certain preference variables are the highest among the first 18 WFS-countries[11].

Data and Methodology

A comprehensive nationwide study on fertility preferences being unavailable, the Bangladesh Fertility Survey, the single most important database which provides wide scope for undertaking research from various points of view, was used. The Bangladesh Fertility Survey (BFS) was carried out between December 1975 and March 1976 by the Ministry of Health, Population Control and Family Planning under the auspices of the World Fertility Survey (WFS) programme as in several other countries[12].

Nearly 6,513 currently fecund married women were successfully interviewed out of 6648, yielding on overall non-response rate of about two per cent. This is the only survey that has collected various items of information on fertility preference variables under the WFS framework, and thus may be considered as the best source of fertility preference data for Bangladesh. The discriminant analysis technique[13] which allows for an analysis of the differences between groups with respect to various variables simultaneously, was used to examine the differences between the two groups of women—those who wanted more children and those who did not, with respect to various demographic, socio-economic and other variables.

Results and Discussion

Two separate analyses were performed on almost similar sets of selected variables to find out the discriminators and their relative importance in distinguishing between women who wanted more children and those who did not, as well as those who intended to contracept in future and those who did not so intend; and thereby their group membership. The variables used in the present analysis and their scores are given in Appendix 1.

Whether or not more children desired

The first 14 variables included in Appendix 1 were examined from the point of view of their power to discriminate currently married fecund women who wanted more children from those who did not. A total of 2,660 women who had provided information on all the 14 variables were included in the analysis. Of these, 609 women wanted more children and 2,051 women did not want any more children.

Table 1, columns 2 and 3, which presents the group means for the selected characteristics indicates that women who wanted more children differed markedly from those who did not so desire in relation to most of the characteristics.

Demographically, though their age at marriage was almost similar, those who wanted more children were, on average, younger, had smaller families, fewer living sons, and a higher child loss experience than those who did not want any children in future. As regards background and socio-economic features too, as compared to women who did not desire more children, those who did so, were comparatively less educated, had less educated husbands who were predominantly in agricultural occupations, and had a slightly lower level of contraceptive knowledge. Again, the latter

TABLE 1
Mean values of selected characteristics for women by desire for more children and intention to use contraceptives in future

Selected variable	Desire for more children		Intention to contracept	
	Group Mean		Group Mean	
	1		1	2
Current age	23.56	29.47	26.00	28.27
Age at first marriage	12.55	12.65	12.58	12.38
Number of living children	1.86	3.92	3.38	3.10
Number of living sons	0.78	2.02	1.63	1.54
Desired versus achieved	2.80	2.08	1.44	1.41
Desire for more children			1.71	1.69
Knowledge of contraception	0.86	0.91	0.91	0.83
Region of residence	2.68	2.51	2.47	2.61
Place of residence	1.19	1.28	1.24	1.19
Wife's level of education	0.53	0.81	0.64	0.49
Religion	1.19	1.23	1.23	1.21
Pattern of work	1.90	1.89	1.91	1.90
Husband's level of education	1.26	1.66	1.44	1.20
Husband's occupation	3.93	3.67	3.78	3.91
Proportion of dead children	0.27	0.17	0.16	0.22

Group 1 represents a positive response and Group 2 represents a negative response. Thus, under "desire for more children" Group 1 represents women who want more children and Group 2, those who do not. Similarly, under "desire to contracept", Group 1 represents women who intend to contracept in future, and Group 2 represents those who do not wish to use contraception in future.

group of women had a higher proportion of rural and Muslim women among them than the former.

These findings suggest that at the discriminant (selected) variable level, on average, women who wanted more children as compared to those who did not, exhibited characteristic differences in the expected manner. The differences however were more marked in relation to the demographic characteristics as compared to the other characteristics studied.

Relative importance of specified variables

Of the 14 variables selected for the above analysis, only eight were found to be significant as indicated by the standardised discriminant function co-efficients in Panel A of Table 2.

TABLE 2
Standardised discriminant function co-efficients for selected characteristics of women by desire for more children and intention to contracept in future

Significant variable	Standardised co-efficient
A. *Want more children or not*	
Current age	- 0.24872
Number of living sons	- 0.30690
Desired versus achieved	0.58797
Region of residence	0.18788
Place of residence	- 0.09047
Wife's education level	- 0.24723
Religion	- 0.08742
Proportion of dead children	0.24637
B. *Intend to contracept in future*	
Knowledge of contraception	0.99521
Current age	- 0.11811
Number of living children	- 0.56464
Desired versus achieved	0.11958
Region of residence	0.49960
Age at first marriage	- 0.42496
Husband's occupation	0.18738
Religion	- 0.13294
Place of residence	- 0.13294
Desire for more children	0.11829
Proportion of dead children	0.10192

The remaining six variables which seemed to lack discriminating power were: age at marriage, number of living children, knowledge of contraception, pattern of work, husband's education and occupation. Except for the number of living children and husband's education, all the other variables had group means which were, by and large, similar (table 1, columns 2 and 3). Surprisingly, the former was redundant probably due to its correlation with the number of living sons, which came out as one of the important discriminating variables. Similarly, husband's education was found to be unimportant when the wife's education became capable of discriminating between the two groups.

Turning to the discriminant function co-efficients for the corresponding variables, the relative sizes rather than the absolute values of the co-efficients were of significance. The signs of the co-efficients also held significance in that a positive sign was interpreted as representing a pull towards the group with a desire for more children. Thus, looking at the signs and relative magnitudes of the co-efficients of the different discriminating variables, the desired size in relation to actual family size (.58797) showed up about twice as important as the number of living sons (.30690), and more than twice as important as current age (.24873).

The number of child deaths was as important as the wife's level of education or current age, while the region of residence was twice as important as religion and place of residence, although the latter two appeared to be negligibly significant. Again, when their signs were considered, for desired versus achieved, the pull was greater in the direction of desire for more children, indicating thereby that the greater the desired family size in relation to the actual size, the greater is the extent of wanting future births.

As expected, the negative sign against the number of living sons indicated a greater influence on non-desire for more children, that is, as the number of living sons increases, more women are pushed to the "want no more children" group. A greater influence was also evident in the case of the region of residence (probably, due to higher fertility attitudes in Chittagong and Dhaka[10]) and child loss, in the expected direction. The negative sign denoting a greater push to the "want no more children" group was evident with an increase in age, level of education, urban residence and non-Muslim religion, all of which are in line with the existing evidence for Bangladesh.

Adequacy of desired discriminant function

As mentioned earlier, one of the applications of discriminant analysis is to combine the characteristics by discriminant function. This enables an identification of the expected group membership of the respondents and thus, a comparison can be made with the actual classification to observe the extent of correct classification. The classification for the predicted group membership was obtained through the classification co-efficients of the discriminating variables for each of the two groups as presented in Panel A of Table 3.

The co-efficients were multiplied by the corresponding value of the discriminating variable of each member, and the product and the constant were added to determine the classification score for each group. The case was then assigned to the group for which the classification score was higher. In other words, membership was allocated to that group to which a woman must closely resemble according to the power of the discriminating variable. The predicted or expected classification thus obtained, was compared with the actual group membership. This comparison is shown in Table 4.

The findings show that 87.3 per cent of the 708 women who stated that they wanted more children, and 69.9 per cent of the 2,333 who did not want more children, had been

TABLE 3
Classification function co-efficients of the discriminators for women by desire for more children and intention to contracept in future

Discriminating variable	Classification function co-efficients	
	Group 1	Group 2
A. *Want more children or not*		
Current age	0.62973	0.67060
Number of living sons	0.83518	1.12866
Desired versus achieved	9.10828	8.05482
Region of residence	1.98776	1.75229
Place of residence	6.92368	7.19623
Wife's education level	-0.29118	-0.02429
Religion	6.80961	7.08651
Proportion of children dead	0.74097	-0.61505
(Constant)	-32.39175	-31.21523
Discriminant function co-efficient evaluated at group level	-0.85182	0.26348
B. *Intend to contracept in future*		
Current age	0.43571	0.51476
Age at first marriage	0.45009	1.42131
Number of living children	2.05626	1.87946
Desire for more children	12.01831	12.19474
Desired versus achieved	12.47664	12.90827
Knowledge of contraception	9.10926	8.27034
Region of residence	1.87343	1.99323
Place of residence	7.78772	7.58240
Religion	6.69916	6.48109
Husband's occupation	5.28439	5.35958
Proportion of children dead	4.30024	4.57041
(Constant)	-69.05408	-70.95544
Discriminant function co-efficient evaluated at group level	-0.48148	0.19634

TABLE 4
Comparison of actual and predicted group membership of women by desire for more children

Observed or actual group membership	Predicted group membership		
	Group 1	Group 2	Total
Group 1	618 (87.3)	90 (12.7)	708 (100.0)
Group 2	703 (30.1)	1630 (69.9)	2333 (100.0)
TOTAL	1321 (43.4)	1720 (56.6)	3041 (100.0)
Ungrouped cases	157 (42.0)	217 (58.0)	374 (100.0)

Group 1 represents women who want more children and Group 2 represents those who do not want more children. Figures in brackets denote percentages.

classified correctly, thereby indicating a higher degree of accuracy in the former group. This means that out of the 3,041 women for whom information on all the discriminating variables was available, nearly 73.9 per cent had been correctly classified to the group to which they actually belonged.

The incorrect classification of about 26 per cent of the women was perhaps because the factors included in the analysis were not the only ones that are important for discrimination in such attitudinal responses; the role of other factors such as psychological and/or environmental factors may be significant. Considering this, it seems quite reasonable to infer that the predictive capacity of the derived discriminant function was adequate.

The survey included 374 women who did not state their desire, if any, for more children though they did provide other general and socio-demographic information about themselves. When these women were classified into one or the other of the two groups on the basis of their characteristics according to the discriminant function, about 42 per cent fell in the group which wanted more children, and the remaining 58 per cent in the group which did not desire more children. On classification, 43.4 per cent and 56.6 of these ungrouped women were found to fall in the two respective groups. It is interesting to note that the classification was identical for grouped and ungrouped cases. In other words, the characteristics (discriminating variables) were similar for those who answered and those who did not answer the question relating to the desire for more children in the survey. This lends support to the contention that those who answered the question are a random sample and had characteristics similar to those who did not answer the question.

Intention to use contraception in future

This section aims to investigate the discriminating power of all the 16 variables presented in Appendix 1 in relation to women who intended to use contraception in future and who did not want to do so. The information was obtained from currently married women who had never used contraception by asking the question: "Do you think, you or your husband will use any method at any time in the future so that you will not become pregnant?"—with possible answers: "Yes" or "No" or "Undecided". The method of analysis was the same as in the previous case. Only 1,809 for whom information on all the selected variables was available, were included for the analysis; of these, 524 intended to use contraception in future and 1,285 did not want to do so.

The mean values of the variables for the two groups are presented in columns 4 and 5 of Table 1. the findings indicate that women who intended to contracept in future were not significantly different from those who had no such intention. However, within the relatively small differences observed between the two groups, it was clear that women who intended to use contraception were, on average, comparatively younger and had a lower child loss experience, but had a higher mean age at marriage, more living children and more living sons, were better educated and had better educated husbands. Again, this group was dominated by urban, non-Muslim women with a higher percentage of the husbands in white collar jobs, and a higher knowledge of contraception as compared to women who did not intend to practice contraception in future. Thus, the attitudes of the women towards future contraceptive use in relation to their characteristics was as expected.

Relative importance of specific variables

Table 2, Panel B indicates that out of the 16 variables included in the analysis, only five failed to exhibit their discriminating power for the two groups of women. These were: the number of living sons, wantedness of the last birth, pattern of work, and the wife's and husband's education.

As explained earlier, the number of living sons become relatively less important when the number of living children becomes an important discriminatory variable. Similarly, the wantedness of the last birth was closely related to desire for more childern or future births. The pattern of work showed the least difference between the two groups and thus, possibly became redundant, while the wife's and husband's education were observed to be redundant perhaps because of their correlation with the husband's occupation which had discriminatory power.

Turning now to the standardised discriminant function coefficients in Panel 2 of Table 2, the knowledge of contraception, number of living children, region of residence, and age at marriage were found to be the first four important variables in that order (ignoring signs). Interestingly, knowledge of contraception, which was observed to be redundant in the previous analysis, appeared to be the most important variable showing almost twice as much influence as the second, third and fourth important variables. Again, the positive sign indicated a greater propensity for desire for future contraception, that is, the greater the knowledge of contraception, the higher is the probability of practising contracption in future. Contraceptive knowledge, which is generally argued to be a precondition for contraceptive use, obviously, should be more important than any other variable, especially with respect to an individual's intention to use contraception in the future.

The number of living children and current age showed a shift towards the "not intending to contracept" group. This possibly indicates the dominance of a negative traditional attitude against contraception of older women with larger families, who are almost at the end of their reproductive lives. A similar argument may be true in the case of age at marriage, religion and place of residence. On the other hand, region of residence showed a greater effect on the intention to use contraception, that is, the proportion of women intending to use contraception showed an increase in more developed regions, namely, Dhaka, which includes the capital city, and Chittagong, which includes the port city, as compared to women residing in Rajshahi and Khulna Divisions. Similarly, women with a lower child loss experience were likely to be more motivated to use contraceptives as expected.

Adequacy of the derived discriminant function

The classification of cases with respect to observed membership and predicted membership are presented in Table 5. To obtain the classification of each woman into one of the two groups, the classification coefficients presented in Panel B of Table 3 were used.

From Table 5 it is evident that about 67.9 per cent of the women who expressed their desire to use contraception in future and 57.1 per cent of those who did not so intend, were classified correctly, the overall correct classification being 60.2 per cent. The overall extent of misclassification was thus nearly 40 per cent indicating relatively poor performance, or in other words, the variables selected were poor discriminators. This was expected in view of the fact that the mean values of the variables of the two groups were not significantly different.

TABLE 5
Comparison of actual and predicted group membership of women by intention to contracept in future

Observed or actual group membership	Predicted group membership		
	Group 1	Group 2	Total
Group 1	375 (67.9)	177 (32.1)	552 (100.0)
Group 2	609 (42.9)	812 (57.1)	1421 (100.0)
Total	984 (49.9)	969 (51.1)	1973 (100.0)
Ungrouped cases	552 (71.3)	210 (28.7)	732 (100.0)

Group 1 represents women who intend to contracept in future, and Group 2 represents those who do not wish to do so.

Figures in brackets denote percentages.

There were 732 ungrouped cases, that is women who did not specifically indicate their intention to use contraception, though they provided information about the other variables. When group membership was predicted by their characteristics, 71.3 per cent and 28.7 per cent were found to belong to the "intend to contracept" and "do not intend to contracept" groups respectively. In contrast, among those who provided specific answers, only 49.9 per cent were classified as "intend to contracept".

This means that the ungrouped cases probably possessed characteristics which were more similar to those who intended to contracept than to those who did not so intend. This conclusion would be acceptable, had the discriminant function been adequate. However, since it is not so, the differences in the classification of grouped and ungrouped cases could either be due to inadequacy of the discriminant function, differences in characteristics, or to both. In any case, it appears that from among the variables available or considered in the analysis, it is difficult to obtain a set of variables which are capable of discriminating between those who intended and those who did not intend to use contraception in future, with a high degree of satisfaction.

Conclusion

Discriminant analysis of the 14 characteristics related to the desire for future births or more children indicated that only eight characteristics, had significantly varying degrees of discriminating powers, say, from 0.58797 to 0.08742 (without signs) in classifying the respondents into the group characteristic membership. Of these, three discriminators, namely desired versus achieved family size, proportion of children dead and region of residence, showed a greater pull towards desire for more children while the remaining five—number of living sons, current age, wife's level of education, place of residence and religion (ignoring signs) exerted a greater pull in the direction of not wanting future births. Thus, the pattern appears to be quite as expected—on average, women who have a greater 'desired' as against achieved family size, or who have experienced a greater child loss, desired more children while older and better educated women did not want more children.

Further, when the discriminating powers of these characteristics were empowered for classifying the women into the two groups, an overall correct classification of nearly 74 per cent was observed. Interestingly, the ungrouped cases, supported the conclusion that women who answered specifically to such a preference question are a random sample and possess more or less similar characteristics as those who did not. Thus, the predictive capacity of the desired discriminant function can be said to be adequate to a great extent, and the discriminators very similar to the actual predictors for Bangladeshi women.

When the intention to use contraception in future was studied, only eleven of the 16 selected characteristics were found to have discriminating power. Among the first four variables, namely knowledge of contraception, number of living children, region of residence and age of marriage (in that order), contraceptive knowledge (0.99521) was about twice as influential as the others in determining the possiblity of future contraceptive use, that is, the higher the knowledge of contraception, the higher is the likelihood of the women using contraception in future. In contrast, the number of living children, age at first marriage, place of residence, religion, current age (in that order) appeared to influence women away from future contraceptive use.

As regards group membership, an overall 40 per cent misclassification was observed for the population under study. The ungrouped cases with 71.3 per cent falling in the group which intended to use contraception and 28.7 per cent in the group which did not, was closer to the former, indicating poor performance of the discriminators, and inadequacy of the function. However, the characteristics that seem to have lack of discriminating powers are: age at marriage, number of living children, knowledge of contraception, pattern of work, husband's level of education and occupation in the first case; and number of living sons, wantedness of last birth, pattern of work, wife's and husband's education in the second case, and thereby redundant from the analyses possibly because of the marginal differences in the group level means (Table 1) or their interrelationship with each other.

Finally, from the above discussion it is clear that our findings are not very different from those reported by Pullum[1, 14]. Among discriminators, the dominance of social factors, such as religion, region of residence, place of residence rather than education of wife or husband, is quite evident in addition to demographic or life-cycle characteristics.

Judging from the extent of correct classification, the discriminating powers of variables seem to be greater in the case of desire for future births than in the case of intention to use contraception in future. However, the dominance of characteristics related to demographic or ascribed rather than achieved, and the significant number of ungrouped cases in both the analyses suggest that attitudes and preferences towards future births or future contraceptive use are not yet totally shaped by the socio-economic or demographic characteristics possessed by Bangladeshi women. Further, it is also important to note that any findings related to fertility preferences need to be interpreted with all possible caution due to the sensitivity of the concept itself. Thus, these findings also deserve further sophisticated analysis before any firm conclusions are derived.

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APPENDIX I

Selected variables with code description for inclusion in discriminant analysis

Selected variables	In Completed years	
1. Current age	In completed years	
2. Age at marriage	In completed years	
3. Number of living children	In actual numbers	
4. Proportion of dead children	(Even-born—Living)/Eye-born	
5. Number of living sons	In actual numbers	
6. Region of residence	Rajshahi	1
	Khulna	2
	Dhaka	3
	Chittagong	4
7. Place of residence	Rural	1
	Urban	2
8. Religion	Muslim	1
	Other	2
9. Wife's education	No schooling	0
	Incomplete Primary	1
	Primary	2
	Middle (5-9 Years)	3
	Matriculation	4
	College and above	5
10. Husband's education	No schooling	0
	Incomplete primary	1
	Primary	2
	Middle (5-9 Years)	3
	Matriculation	4
	College and above	5
11. Husband's occupation	Never worked	0
	Professional Technical	1
	Clerical	2
	Sales and Services	3
	Cultivator, Share Cropper & Household	4
	Landless Ag. Worker & Labour	5
12. Pattern of work	Ever worked	1
	Never worked	2
13. Knowledge of contraception (any method)	No	0
	Yes	1
14. Desired versus living	Desired > Living	1
	Desired = Living	2
	Desired > Living	3
*15 Desire for more children	Wanted more	1
	Wanted more	2
*16 Wantedness of last birth	Wanted	1
	Not wanted	2

* Included for discriminating women who intended to use contraception from those who did not.

A comparative benefit-cost analysis of the family welfare programme in India and Orissa

Dr. P. Nayak and Dr. C.R. Das

Introduction

Since the last few decades, most developing countries are in the grip of burgeoning populations. Population control has, therefore, a fundamental place in all development economies. In India too, population control has been the focus of attention of the central and state governments as well as demographers. During the past few decades, the rapid growth of population has been an imminent hurdle for the country's development. "In India, an increasing population produces a wide variety of impediments to development: consumption needs increase and the saving rate is affected. The outlays necessary for social services like primary education, high schools, health centres, hospitals etc. increase beyond what is estimated at the beginning of any Plan period"[1]. "Thus, at the end of ten years from now, the economy has to bear a consumption load of 39.3 per cent of population, in addition, of course, to that part of the working population which is unemployed[2].

India's population which was growing slowly before 1921 due to high mortality resulting from epidemics, famines and other natural disasters, began to rise rapidly with the effective control of epidemics and the management of other natural calamities which caused a substantial decline in the death rate (with a stagnating birth rate). The average annual growth rate thus rose from 0.56 per cent in 1911 to 2.28 in 1981 and further, to 2.36 in 1991. The annual population growth rates as computed from Census figures and those estimated by the Registrar General of India for India and Orissa are given below.

Year	Average annual growth rate (%)		Year	Natural growth rate (%)	
	India	Orissa		India	Orissa
1951	1.26	0.64	1984	2.13	1.84
1961	1.88	1.98	1985	2.11	1.61
1971	2.24	2.51	1986	2.15	1.29
1981	2.28	2.02	1987	2.13	1.77
1991	2.36	1.95	1988	2.04	1.94

The table shows that the annual growth

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rates of Orissa computed from Census figures and those estimated are quite close. It is also encouraging to see the population growth rate of Orissa showing a steady and perceptive decline over the last two decades. The decennial growth rate during 1981-91 was 19.50 per cent as compared to 23.56 per cent for the country as a whole. It may, therefore, be said that the population growth of Orissa in itself cannot be considered an impediment to the development of the state. However, a further reduction in the growth rate by way of improved family welfare performance and greater consciousness of the small family norm among the people would reap promising results in the future.

Over the years, the expenditure on the family welfare programme has increased both at current as well as at constant prices. Again, while a sum of Rs. 50 billion had been spent on family planning as of 31 March 1988 by the country as a whole, the achievements have been disappointing as compared to that of several Asian countries such as Korea, Indonesia and Thailand, which had launched family planning programmes much later than India, but have achieved higher contraceptive prevalence rates and larger fertility declines.

India's contraceptive prevalence rate (CPR) has increased to 40 per cent but fertility has declined less than expected during every Five Year Plan period. In fact, since 1987, the crude birth rate has stagnated at around 33 births per thousand population. Thus, in recent years, this lack of success has been a major concern of programme administrators, planners and demographers, and efforts to increase the effectiveness and efficiency of the programme are urgently needed. One problem is that of enormous interstate and inter-district variations in the CPR and in fertility. For example, in 1988, while there were areas in almost all the states with a CPR as high as 60 per cent, a level targeted for the country as a whole by the turn of the century, there were also districts with a CPR below 15 per cent.

At current prices, the expenditure on the family welfare programme in Orissa was Rs.2185.03 lakhs in 1988-89 as against an investment of Rs.797.72 lakhs in 1980-81. In terms of achievement, in 1988-89, Orissa met 80.3 per cent of its sterilisation target, 98.8 per cent of its IUD target, 94.9 per cent of its target for conventional contraceptive users, and 137.9 per cent of its oral pill target. The state's performance thus has been quite remarkable since 1985-86. Nevertheless, an objective assessment of the family welfare programme in India as well as of the states then is fundamental for providing the necessary feedback for improving performance so that the objectives of the programme are met. In this paper, such as analysis using the cost-benefit technique has been attempted to study the impact of the family planning programme in India and one of the states, namely Orissa.

The benefit-cost analysis technique has been widely used for evaluating projects and programmes. However, the situation differs significantly in the case of the family welfare programme in that the benefits derived from the programme are multi-dimensional and difficult to measure in quantitative terms. The possible benefits of averting births are the improved health of the mother and children and their projected contribution to the state/national income, the higher propensity to save due to smaller family size, capital accumulation and national progress, a reduction in the level of unemployment, increased availability of consumption items reflecting an improvement in the quality of life, a reduction of congestion and improvement in sanitation, and so on. It also allows the society to provide better health and education to children. These parameters are not amenable to quantitative assessment. Therefore, in making the benefit-cost analysis, certain items of a subjective nature have been excluded because of the practical difficulty in putting a monetary value on them. Here, 'cost' refers to the total expenditure from government and non-government sources. Since a major portion of India's demographic investment is being wasted on account of high levels of infant and child mortality, it was considered worthwhile to evaluate the family welfare programme objectively by using benefit-cost analysis with the purpose of obtaining useful information for revitalising and strengthening the programme.

Methodology

Three broad indicators namely the number of acceptors of family planning per 1000 population, the percentage of couples (wife in the reproductive age of 15-45 years) protected against the risk of contraception, and the number of births averted were used to measure the impact of family welfare programmes[3].

The economic analysis of benefit-cost suggests an evaluation of the impact of governmental and non-governmental expenditure on family welfare programmes in order to achieve economic benefits. The total number of births averted was arrived at by taking three times the total number of equivalent sterilisations due to all methods as in earlier studies.[5, 6] To this, was added the births terminated by MTP or medical termination of pregnancy (an earlier evaluation study[4] of the Indian programme during 1966-67 to 1978-79 had ignored the number of births averted due to MTPs). It is assumed that a single sterilisation amounts to three births averted. Equivalent sterilisations were calculated by adding the number of sterilisations, 1/3 the number of IUD insertions, 1/18 the number of equivalent users of conventional contraceptives, and 1/9 the number of equivalent oral pill users.[7]

The benefit accrued to society by averting a birth was given by the difference of the money value due to the averted birth and the loss incurred by the nation. Here, 'benefit' refers to all kinds of expenditure that would have been incurred by the society on the child throughout his/her lifespan, and 'loss' means the additional income that would have been generated by him/her for the state or nation during his/her working life which has been foregone due to the avertion of the birth. The value of an averted birth has been computed by many population scientists and demographers and ranges from Rs.690 to Rs.7,800 (some discounted and some not) as shown in Table 1.

TABLE 1
Value of an averted birth

Source	Value of averted birth	Discount rate	Effective year
Stephen	6000	Undiscounted	1960-61
Enke	690	10	1960-61
Repetto	1500	10	1960-61
Simon	7800	10	1967-68
Basu	3500	10	—
Dahiya	5100	Undiscounted	1974
Badari	1300	10	1961

Source: "Benefit-cost analysis of the Indian family welfare programme—, Rani Gopal, K.: *The Indian Economic Journal,* 31(1-4):45 (1984).

Repetto's computed value of an averted birth of Rs. 1,500/- (discounted at ten per cent) at 1960-61 prices has been used by Sivaram[5] to evaluate the family planning programme in Andhra Pradesh during 1963-64 to 1973-74, and by Rani Gopal[4] for India during 1966-67 to 1978-79 by adjusting the value to 1970-71 prices. For the purpose of our evaluation, Repetto's value of an averted birth was used by adjusting it to 1981-82 prices; this worked out to Rs.7,576. The benefit to the nation and the state (Orissa) was computed by multiplying this value by the number of averted births. The cost that is, the expenditure incurred by the programme was converted to constant prices with 1981-82 as the base year. The benefit to cost ratios were computed for the period 1980-81 to 1989-90 for India and Orissa to evaluate family planning performance during this period.

The data on equivalent sterilisations, MTPs and expenditure on the family welfare programme in India and Orissa were extracted from the Pocket Book on Family Welfare Information, Government of India[6], Statistical Abstracts and Statistical Outline of Orissa[7], and Directorate of Economics and Statistics, Government of Orissa[8].

Results

Table 2 presents the expenditure incurred by the family welfare programme, the number of equivalent sterilisations, the number of MTPs, and the number of births averted in India (Panel A) and Orissa (Panel B) during the period 1980-81 to 1988-89 while Table 3 depicts a comparison of the benefit-cost ratios of the programmes in India and Orissa. As evident from Table 3, the benefit-cost ratio for India was 38.49 in 1980-81 as against 38.87 in 1988-89, implying no significant change over the nine-year period. The findings also suggest that the benefit-cost ratios may not change drastically by the turn of the century unless the specific intervening policies of the government also change.

The benefit-cost ratios further reveal that Orissa's family planning performance was comparatively less effective till 1984-85, but seem to have improved significantly (a shift of about 34 per cent over the preceding year) from 1985-86, which can be considered as the year of family planning transition for Orissa. Thereafter, the benefit-cost ratios remained at more or less the same level upto 1987-88, and exhibited a further upward movement in 1988-89.

TABLE 2
Expenditure on family welfare, equivalent sterilisations, number of MTPs and births averted, India and Orissa, 1980-81 to 1988-89

Year	Expenditure on family welfare (Rs. in millions)		No. of equivalent sterilisations (in thousands)		No. of births averted by FP (in millions)		No. of births averted by MTP (in millions)		Total number of births averted (in millions)	
	India	Orissa	India	Orissa	India	Orissa	India	Orissa	India	Orissa
India										
1980-81	1408.98	79.77	2479	101	7.437	0.303	0.388	0.020	7.825	0.322
1981-82	1930.20	116.55	3302	122	9.906	0.366	0.434	0.020	10.340	0.386
1982-83	2883.20	169.09	4689	162	14.067	0.486	0.516	0.020	14.583	0.506
1983-84	3829.84	205.96	5750	201	17.250	0.603	0.547	0.025	17.797	0.628
1984-85	4240.66	184.65	5555	188	16.665	0.564	0.578	0.022	17.243	0.586
1985-86	4798.09	167.13	6666	235	19.998	0.705	0.584	0.023	20.582	0.729
1986-87	5691.81	189.20	7104	247	21.312	0.741	0.588*	0.021	21.900	0.763
1987-88	6009.08	225.44	7251	260	21.753	0.780	0.585	0.025	22.338	0.808
1988-89	6718.44	218.50	7255	305	21.765	0.915	0.578*	0.026	22.343	0.942

* Figures provisional.

Source: Pocket Book on Family Welfare Information, Government of India, Ministry of Health & Family Welfare, Dept. of Family Welfare, New Delhi, 1991, and Statistical Abstracts of Orissa 1981 & 1991, Directorate of Economics and Statistics, Government of Orissa

TABLE 3
The value of averted births and beneift-cost ratio for India and Orissa, 1980-81 to 1988-89

Year	Expenditure on family welfare programme (Rs. in millions)*		Value of averted births (in Rs. in millions)		Benefit-cost ratio (B/C)	
	India	Orissa	India	Orissa	India	Orissa
1980-81	1,540.375	87.211	59,282.200	2439.866	38.49	27.98
1981-82	1,930.199	116.551	78,335.840	2923.230	40.58	25.08
1982-83	2,748.519	161.189	10,480.808	3834.335	40.20	23.79
1983-84	3,395.245	182.590	134,830.072	4754.357	39.71	26.04
1984-85	3,530.940	153.748	130,632.968	4436.286	37.00	28.85
1985-86	3,826.227	133.485	155,929.232	5521.859	40.75	41.37
1986-87	4,289.230	142.575	165,914.400	5780.170	38.68	40.54
1987-88	4,184.594	156.994	169,232.688	6115.059	40.44	38.95
1988-89	4,354.144	141.609	169,270.568	7134.956	38.88	50.38

** at 1981-82 prices.

Conclusion

The trend of benefit-cost ratios for India and Orissa seems to lie in opposite directions. The projected benefit-cost ratios for India are 37.42 in 1994-95 and 37.03 in 1996-97, 36.65 in 1998-99 and 36.28 in 2000-01. This decreasing trend may not be considered as a decline in the performance of the family welfare programme since its impact is difficult to evaluate due to the complex relationship of population with other variables of development. This helps to pave the way for the implementation of polices and programmes which can influence not only the various parameters affecting the growth of population and its structure but also the welfare of the people. Hence, one may conclude that the impact of the family welfare programme is much more than the benefits computed in this paper. The trend of the benefit-cost ratio over the years in the case of Orissa shows an upward movement with a sharp increase in 1985-86, suggesting the likelihood of a higher benefit-cost ratio in the years ahead.

The marital fertility rate among women below the age of 30 years who have not been using contraceptives has been observed to rise steadily during the past three decades. It is, therefore, important that more younger women with one or two living children be protected from further conceptions. The efficacy of the family planning programme will, therefore, be higher in the event that more more younger age couples are protected. Thus far, the family planning programme has, by and large, accorded protection to older women of higher parity because of the undue emphasis on sterilisation; only 20 per cent of married women in the 15-25 age group have been effectively protected. The family welfare programme, therefore, needs to be evaluated in terms of the protection offered by an age distribution of eligible couples. To that extent then the benefit-cost ratios suffer from being able to explain explicitly the impact of the programme.

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Knowledge and perception of adolescents regarding factors affecting family formation

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Introduction

The most crucial segment of the population on which socio-economic development depends to a great extent, is constituted by young people, especially women—the mothers of today and the mothers-to-be of tomorrow. And yet, this is precisely the segment of the population that is currently most neglected.[1]

Adolescence (11-18 years) is a distinct and crucial phase in the development of a human being, and is characterised by physical, psychological and behavioural changes.[2] It is essential therefore, that adolescents are made aware of the various aspects of family formation so that they develop healthy attitudes and have the knowledge to take responsible decisions affecting their own reproductive health and well-being as well as that of their families when the time comes.

Some of the major aspects which affect family well-being are age at marriage, problems associated with large families, family size preference, birth spacing, and awareness of pregnancy care. An understanding of the knowledge that adolescents have on these aspects will not only help in identifying their health education needs in relation to family formation, but also in planning appropriate family life education strategies for them. The present study was designed with this aim in mind.

Sample and Methodology

The sample for the study was drawn from one of the Integrated Child Development Services (ICDS) Project areas in Pondicherry during the month of April 1991. Two hundred and forty one adolescents between the age of 15 and 18 years were identified from three Anganwadis located in the area by a two-stage sampling procedure. First, one of the primary health centres (PHCs) under the Project area was selected at random. At the second stage three lists containing names of sub-centre villages,

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villages within two kms. from the sub-centres, and villages beyond two kms from the sub-centre were prepared. Finally, one village was selected randomly from each of the three lists so as to yield a sample of three villages. During the initial survey, house-to-house visits were undertaken to identify each and every adolescent in the area.

A pre-tested interview schedule (translated in the local language, Tamil) was used to collect the required information. The schedule included structured, semi-structured and open-ended questions on the right age at marriage, the ideal age at first pregnancy, family size preferences, birth spacing, natal care, and problems associated with large families. The interview techniques were standardised, and Anganwadi workers and organisers (Mukhya Sevikas) in the sample villages were trained to administer the questionnaires. The interviews were conducted in an informal and relaxed atmosphere by providing as much privacy as is possible in a field situation to facilitate free and frank expression of the respondents' views. Follow-up visits were made to interview adolescents who were not available at home at the appointed date and time.

Supportive supervision was provided throughout the period of study by the Child Development Project Officer (CDPO) and the faculty from the Department of Preventive and Social Medicine, JIPMER, Pondicherry.

Results

The total sample of 241 adolescents (age—15-18 years), included 100 boys and 141 girls. Sixty seven per cent of the boys and 48 per cent of the girls had studied up to the secondary level. There were more girls (14 per cent) than boys (two per cent) who had not gone to school. More girls than boys also seemed to have dropped out before attaining the secondary level: 29 per cent of the boys as compared to only 15 per cent of the girls had reached the higher secondary level.

Table 1 (Panels A and B) presents the respondents' views regarding the right or preferred age of marriage for females (Panel A) and males (Panel B). Almost half of both boys and girls—52 per cent of the boys and 53 per cent of the girls—considered 18-19 years as the right age for girls to marry (Table 1, Panel A). Among those who preferred a higher age at marriage for girls, more boys (21 per cent) than girls (11 per cent) selected 21 years or more as the right age, while significantly more girls (30 per cent) than boys (18 per cent) opted for 20 years as a suitable age at which to get married.

TABLE 1
Distribution of respondents by their opinions on the right age for marriage and first pregnancy

Age (in years)	Opinion of	
	Boys* (N=100)	Girls (N=141)
A. *For marriage*		
For females		
Below 18	2	4 (3)
18-19	52	75 (53)
20	18	43 (30)
21 or above	21	15 (11)
Do not know	3	3 (2)
Not recorded	4	1 (1)
B. *For males*		
Below 21	9	22 (16)
21-22	33	42 (30)
23 or above	45	69 (49)
Do not know	6	8 (5)
Not recorded	7	–
C. *For first pregnancy*		
18	0	1 (7)
19	7	8 (6)
20	24	31 (27)
21 or above	68	80 (53)
Do not know	2	21 (15)

* The number and percentage of respondents are the same. Figures in brackets denote percentages.

As regards the right age for marriage for males too, the most preferred age among both boys and girls was 23 years or more (boys: 45 per cent; girls: 49 per cent), the next preferred age being 21-22 years mentioned by about a third (30-33 per cent) of the respondents (Table 1, Panel B). That almost half of both boys and girls agreed that females and males should get married at 18+ and 23+ years is a welcome sign. However, while a negligible proportion (2-3 percent) of the respondents felt that females should marry before 18, 9 per cent of the boys and almost 16 per cent of the girls considered that males should marry before reaching 21.

From Table 1, Panel C which presents the responses on the ideal age for the first pregnancy, it is gratifying to observe that the majority that is, 68 per cent of the boys and 53 per cent of the girls suggested 21 years or more as the ideal age to bear the first child. When viewed in the light of the findings of Table 1, Panel A, these responses are encouraging; that is, although as many as 72 per cent of the boys and 86 per cent of the girls were of the view that a girl should marry at or before 20 years of age (including 52-53 per cent of both boys and girls who opted for 18-19 years as the optimal age), the majority (boys: 68 per cent; girls: 53 per cent) considered 21 as the appropriate age for the first pregnancy, that is, a wait of one to three years after marriage. And, a marginal 7-8 per cent and 25-27 per cent of both boys and girls thought 19 and 20 respectively to be the right time to bear the first child. Further, while an equal proportion—28-29 per cent of both boys and girls—considered a gap of two years as adequate between the first and the second child, girls were more likely than boys to prefer longer intervals of three or more years (Table 2, Panel B).

Significantly, as many as 15 per cent of the girls (as compared to a mere 2 per cent of the boys) did not seem to have a clear idea about the desirable age for the first pregnancy (Table 1, Panel C). Likewise, 10-15 per cent of all respondents could not give a specific reply on a suitable birth interval between the first and second child (Table 2, Panel B).

TABLE 2

Distribution of respondents by preferred family size and spacing between the first and second child

	Opinion of	
	Boys* (N=100)	Girls (N=141)
A. *No. of children preferred*		
One	22	19 (14)
Two	66	107 (79)
Three	8	8 (6)
More than three	—	1 (1)
Don't know	4	3 (2)
B. *Interval between 1st and 2nd child*		
One year	16	16 (11)
Two years	29	39 (28)
Three years	19	35 (25)
3 + years	15	26 (18)
Don't know	10	21 (15)
Not recorded	11	4 (3)

* The number and percentage of respondents are the same. Figures in brackets denote percentages.

When asked about the number of children a couple should have, the majority (79 per cent of the boys and 76 per cent of the girls) were in favour of a two-child family, though a fifth (22 per cent) of the boys and fewer (14 per cent) girls expressed a preference for a single child family (Table 2, Panel A). The problems which they associated with large families were related to food (85 per cent), education (69 per cent), clothing (55 per cent), health (26 per cent), and housing (24 per cent). There was no difference in the perception of boys and girls in this regard.(Table not given).

Table 3 presents the adolescents' knowledge regarding the basic care required during pregnancy.

TABLE 3
Distribution of respondents by their awareness of basic natal care

Awareness of	Opinion of	
	Boys* (N=100)	Girls (N=141)
Supplementary nutrition	65	95 (67)
TT Immunisation	41	87 (62)
Iron and Folic acid	27	64 (45)
Health Check-up	22	27 (19)
Less food	11	14 (10)

* The number and percentage of respondents are the same. Figures in brackets denote percentages.

Over two-fifths of both boys (65 per cent) and girls (67 per cent) were aware of the need for supplementary nutrition during pregnancy. Tetanus toxoid immunisation was suggested by 41 per cent and 62 per cent of the boys and girls respectively, while as many as 27 per cent of the boys and 45 per cent of the girls knew about iron and folic acid tablets. The need for a regular health check-up was also mentioned but by only 22 boys and 27 girls. However, it was surprising to find that a tenth of the boys and girls were of the view that a woman should eat less during pregnancy. Overall, the girls seemed to have a better awareness about care during pregnancy than the boys.

Discussion

The knowledge of the girls and boys in relation to six important areas involved in family formation, as indicated by the above findings, seems to be quite encouraging. The Child Marriage Restraint Act of 1978, raised the legal age of marriage from 15 to 18 years for girls and from 18 to 21 years for boys. The opinions on the right age for marriage as expressed by the majority of the young respondents interviewed were in agreement with this. However, 25 per cent of girls and boys were still in favour of early marriage. Similarly, an equal proportion were either not aware or believed that a spacing of one year between the first and second child is adequate. This suggests that there is enough scope for educating adolescents to make them aware of the steps involved in building an ideal, healthy family.

It appears that the concept of a healthy family and the factors influencing the same were not clearly understood by them as only 26 per cent were aware that the health of the children and the family is affected by its size. A health check-up during pregnancy was also considered essential only by 20 per cent of both boys and girls. However, their knowledge about the other elements of natal care such as supplementary nutrition and tetanus toxoid immunisation was good. These findings suggest that increasing their awareness regarding issues related to family welfare may help change family formation attitudes.

The study focussed on 15-18 year-olds, a group which hardly receives any formal education on family life education. However, it is interesting to note that teachers and class text books were important sources of information mentioned by the adolescents. This is due to the fact that more than half of them had attained education upto the secondary level. This underlines the importance of female literacy. The mass media such as the television, radio and messages written on buses were other sources of information.

This exploratory study on a small sample of adolescents suggests the need for family life education at an early age for laying the foundation for a healthy family. More formal as well as informal ways of imparting relevant education may be developed utilising the sources identified through the study. Important messages such as problems related to large families, consequences of early marriage and early pregnancy, birth spacing and care during pregnancy could be displayed on buses and trains and in other public places. This may be further reinforced by organising functions with themes related to family welfare and by the use of mass media.

It is relevant to mention that the needs identified through this study may have certain limitations as Pondicherry has good and accessible health and communication facilities, literacy is high and it is socio-economically developed. To conclude, developing an appropriate family life education strategy for adolescent groups would not only help achieve the broad objectives of the family welfare programme but prove to be cost effective as well.

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District level approach to family welfare programme in India: A proposal for effective action*

Dr. Devendra Kothari and Ms. Anuja Gulati

Background

The Indian family welfare programme is a centrally sponsored scheme, implemented by the State governments within the framework of elaborate guidelines and norms developed by the Central Government. Although each State is encouraged to introduce innovative approaches within these policy parameters, in practice, the family welfare programme in the country has been macro in approach, sectoral in coverage, and highly centralised. It has, therefore, failed to achieve the desired results. The strategy adopted so far has created a wide gap between the provider and the client, and the lack of involvement of people has led to the failure of the programme. Thus, there is a growing concern among policy makers and implementors that the centralised standardised nature of the scheme gives local programme managers insufficient flexibility to meet varying local needs.

There is also an increasing awareness that intra-state variations in terms of language, social and religious groupings, distance between settlements, access to services, the health and nutritional status of the local masses and so on are as significant as variations between states, given the continental nature of the country. There is now a growing consensus that the family welfare programme should as far as possible be tailored to meet the needs of individual districts, therefore the district should be seen as the basic unit for management of the programme.

As a first step in this direction, the Government of India has identified for special attention, 90 districts of the country where the crude birth rate is above 39 births

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per thousand population on the basis of the 1981 Census. Out of the 90 districts, 83 districts are in the four northern Hindi-speaking states of the country which constitute around 40 per cent of the total population of India (Figure 1).

The Government of India intends to adopt a district-based management system in these districts which will permit local managers to play an important role in order to achieve the set demographic goals at the earliest. The Central Government has, therefore, outlined the processes to be followed so as to achieve the goals; these mainly emphasise "strengthening infrastructure and improving training of staff".[*]

It should however, be noted that merely improving infrastructural facilities and enhancing training of staff will not allow local managers greater flexibility for designing operational strategies to meet local needs that would help improve the demographic situation unless structural changes are brought about in the programme[1]. The main aim of this paper then is to evolve a comprehensive district level approach for the effective implementation of the family welfare programme in a decentralised manner. The approach is based mainly on a study conducted in some districts of Rajasthan[2].

Family welfare programme in India

To control and stabilise the growth of population, the national family planning programme was launched in 1952 by the Government of India. Since then, it has gone through several stages of adjustment in terms of strategies and approaches. The programme is now being implemented as a family welfare programme with mother and child health care as an integral part.

The resources allocated for the programme may not be sufficient, but have increased in absolute as well as in real terms over time.[**] A large number of family welfare service centres in the form of Primary Health Centres (PHCs), sub-centers, etc. have been established all over the country.[***] Further, India is fortunate that there is no strong outcry of opposition to the programme from any sector of the population. There are organisations to support it but no organised movement against the programme. Inspite of this, the programme has failed to produce the desired impact on the country's galloping population growth.

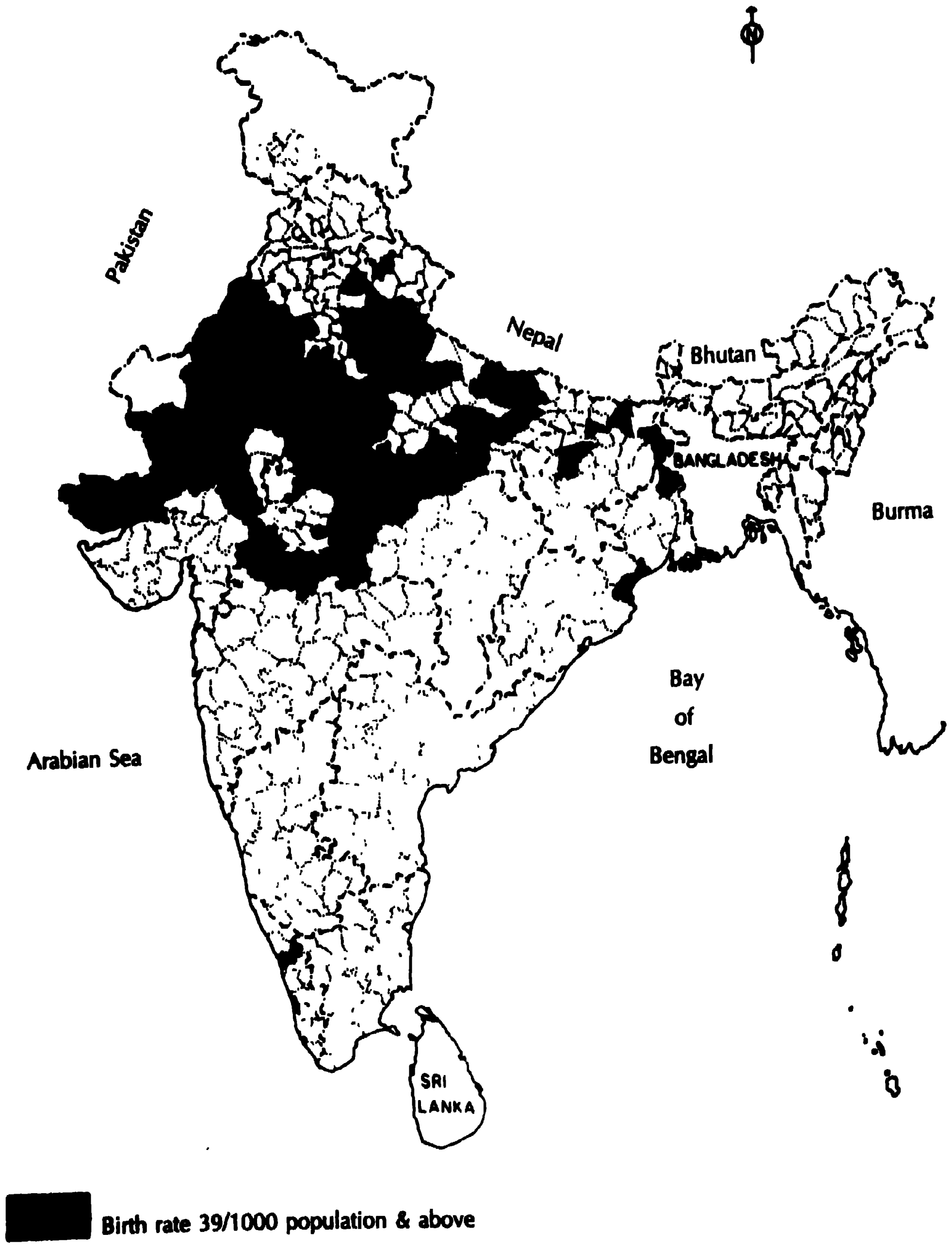
It is not that people are averse to the programme. Several studies have shown that a majority of couples wish to limit their family size. Various studies support this notion. About five to six million abortions take place in India every year[3], and about 25 per cent of the pregnancies that occur after the third child are reported as unwanted[4]. About 13 million currently married women in the four northern Hindi speaking states of Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan, do not want more children but are not using any form of contraception, and if

For details, see, "Action Plan for Revamping the Family Welfare Programme in India", Department of Family Welfare, Ministry of Health and Family Welfare, Government of India, New Delhi, 1991.

The resources allocated for the family welfare programme during the Seventh Plan (1985-90) were Rs.32,860 million, representing an increase of 302 per cent over Rs.10,780 million allocated during the Sixth Plan Period (1980-85). According to the latest budget, this allocation has increased by 17 per cent from Rs. 8570 million in 1991-92 to Rs.10,000 million in 1992-93.

The number of PHCs, sub-centres, and upgraded PHCs/CHCs (as on 1.4.89) were 120,767; 18,811 and 1,631 respectively. Source: Year Book 1988-89: Family Welfare Programme in India, Ministry of Health and Family Welfare, Government of India, New Delhi, 1990.

FIGURE 1
India : High fertility districts
(Based on the 1981 Census)



they did, fertility would drop by around 12 per cent[5].

According to another study[2] conducted in 1988, a sizeable number of eligible couples in a demographically backward state like Rajasthan are keen to practice family planning but have not been able to do so because of certain reasons which mainly include poor quality services and inadequate follow-up. A study[6] conducted by the Operations Research Group in 1990 confirmed this and came to the conclusion that around 23 per cent of eligible couples are ready to accept family planning services in Rajasthan but do not do so.

All these findings indicate that people want to limit their family size but the programme has not been able to convert both their latent interest and desire into effective demand. This is primarily due to the fact that the programme has not been designed on the basis of the socio-cultural ethos and needs of the local people.

Need for structural change

There are long-term causes underlying the poor performance of the family welfare programme in the country, some of which are structural in nature[7]. The family welfare programme is a centralised programme with all major decisions percolating downward from the top with little or no participation of the people for whom the programme is meant. Therefore, the willingness and commitment of people has not been harnessed. Besides, an area specific approach and marketing strategies have not been adopted, in spite of the fact that in a continental country like ours where wide variations exist in terms of population density, degree of development, socio-economic conditions, topography, expectations of the masses, etc. targets are set and guidelines to achieve these are given by the centre.

Further, the programme has been made the responsibility of the medical department, which is not desirable in the present context, and is quite different from the situation when the programme was initiated. Family planning is not so much a clinical or medical problem because a healthy person goes in for family planning and a sick person goes to the hospital. Moreover, health is a universal requirement whereas family planning is age specific. With the same people (doctors) being responsible for both medical and family welfare, the former being more urgent in nature gets priority over the latter. Moreover, the role of the medical department in the realm of family welfare is likely to be small in future. This is because the popularity of non-terminal methods is increasing and the role of terminal methods (sterilisation) is decreasing. Therefore, the motivator assumes special significance. This also calls for a constant motivational strategy which would need social physicians trained in the art of motivation rather than clinicians to handle the programme.

Whenever one talks of population and its control one tends to think of family planning alone. This is because all government efforts or programmes of population have been woven around family planning. This is not a correct approach. Although fertility is a complex issue and is influenced by various factors like female literacy, female status, son preference, age at marriage, level of child mortality, etc., it does not mean that the family welfare programme should include under it all these beyond family planning aspects which influence fertility behaviour[8]. Therefore, the scope of the programme should be defined carefully and it should only be considered as one of the many efforts which would help arrest the galloping population growth.

The above discussion suggests that the programme should be restructured and revitalised with the district as the nodal point for all activities, and that such restructuring should take a holistic perspective of the situation.

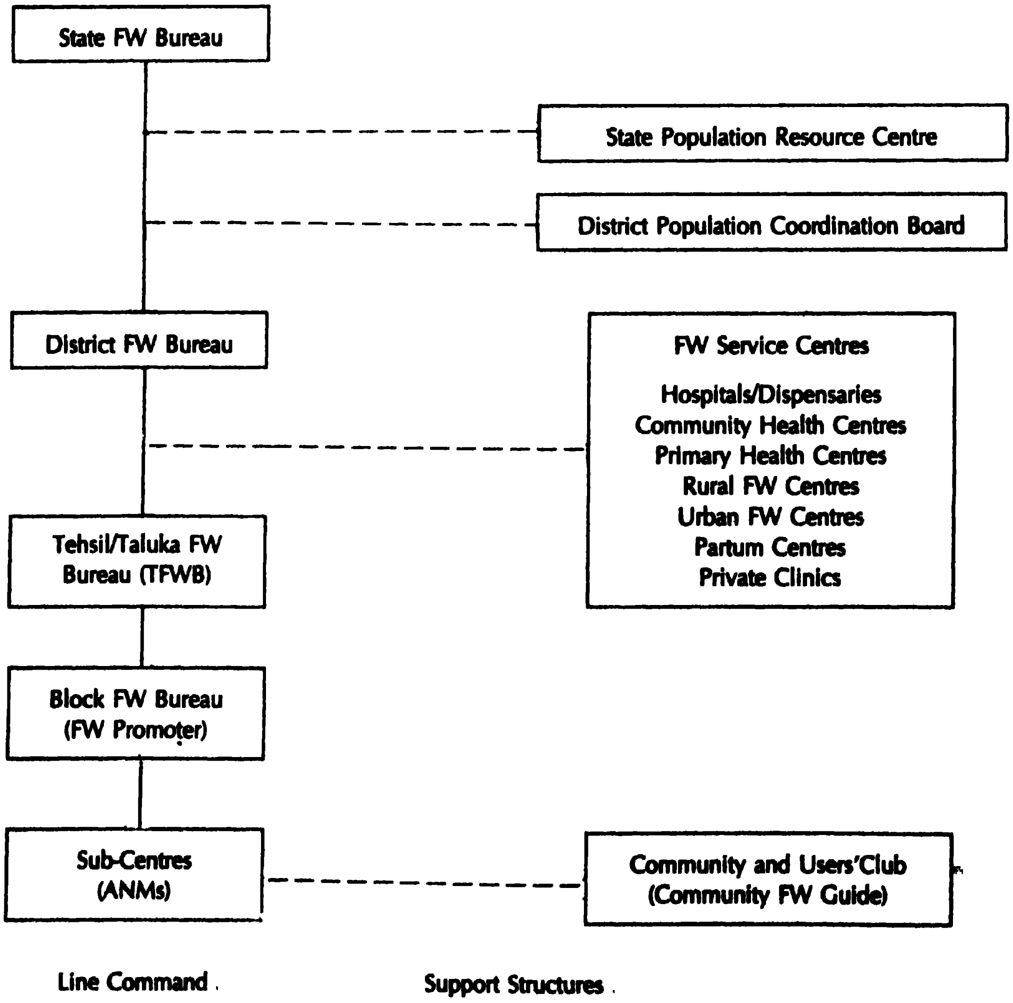
District level approach: Scope and structure

In the proposed approach, as mentioned above, the district would be the nodal point for planning and implementation of all activities pertaining to the family welfare programme. The family welfare programme restructured on the above basis would be one of the many means of tackling the population problem. The revised programme would concentrate on providing basic MCH and family planning services which include ante-natal care and so on. High risk cases requiring clinical attention and persons interested in adopting sterilisation would be referred to medical institutions. However, the programme would be responsible for ensuring good quality of services and follow-up care. Thus, clinical services would be arranged through a system of operating contracts which the peripheral units could have with the government and private hospitals, PHCs, and so on.

The organisational structure for the proposed approach is diagrammatically presented in Figure 2.

FIGURE 2

Implementation of the family welfare programme by an alternative approach : A model



The approach envisages a revival of the existing District Family Welfare Bureau (DFWB) and making it responsible for implementing the programme*. The DFWB would be an autonomous body with the complete responsibility for managing all the family welfare activities in its district.

The district would further be divided into Tehsil/Taluka Family Welfare Bureaux (TFWB) headed by Family Welfare Officers. The TFWBs would be responsible for looking after the needs of the lower level units under their jurisdiction. The Tehsils/ Talukas would in turn be divided into family welfare blocks, headed by a Family Welfare Promoter. Each family welfare block would cater to a population of 30,000. The Family Welfare Promoter would in turn look after six Auxiliary Nurse Midwives (ANMs) each catering to a population of 5000**.

The Bureaux would be in line command and directly responsible for implementing the family welfare programme. A District Population Coordination Board would be entrusted with the responsibility of involving various units at the district level and bringing about a consensus on implementing the family welfare programme at the district level. Support services in the form of clinical services would be obtained from the family welfare service centres i.e. government and private hospitals and clinics which would constitute the support structures.

Organisational processes

The new system would be a bottom-up approach and would progress from parts to the whole rather than descend from the top, as is the practice currently. The main features of the new system are described in the paragraphs that follow.

State Family Welfare Bureau

The State Family Welfare Bureau would play a coordinating and supervisory role. It would mainly serve as a liaison agency between the Centre and the State and provide guidance for formulating district family welfare plans. It would also evaluate the performance of districts under its jurisdiction and suggest suitable remedial measures, if and when required.

State Population Resource Centre

This Centre would be an autonomous organisation. It would undertake relevant research and consultancy with special relevance to population control and the family welfare programme. It would also help the District Family Welfare Bureaux to design district demographic plans and help evaluate the programme.

District Population Coordination Board

Fertility is a complex issue and is determined by various factors. Hence, various agencies, units and experts would have to be involved even at the district level. The main aim of the District Population Coordination Board would be to bring various units like education, agriculture, family welfare, medical and health, social welfare, ICDS programme, youth clubs, women's organisations, NGOs, etc. to a common platform to discuss the population problem and

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To implement the programme, District Family Welfare Bureaux (DFWBs) were created in the late sixties. There are 399 DFWBs which employ various categories of people. The number of people employed was 6,727 as against the sanctioned positions of 8,132 as on 31.3.1990. (Source: Year Book 1989-90, Family Welfare Programme in India, Ministry of Health and Family Welfare, Government of India, New Delhi, 1991).

The number of Community Family Welfare Guides, ANMs and Family Welfare Promoters can be increased depending on the need of the area.

bring about a consensus in implementing the family welfare programme at the district level. The Board would be headed by the District Collector who would be fully involved in coordinating the activities related to the family welfare programme.

District Family Welfare Bureau

The District Family Welfare Bureau (DFWB) would be a nodal agency and would formulate area-specific and need-based plans for the district. A long-term plan could be drawn up for 5-10 years. In addition to this, specific strategies and annual plans could be formulated within the framework of the long-term plan. The plan would show the kind of demographic scenario the district would have in the future. The DFWB could get the required help from the State Population Resource Centre for designing the demographic plans based on which every District Family Welfare Bureau would be required to set its own annual work targets. Each DFWB would be divided into Tehsil/Taluka Family Welfare Bureaux and these would look after the needs of lower units under their jurisdiction.

Block Family Welfare Bureau and Peripheral Units

The Block Family Welfare Bureau levels would be the actual points at which the family welfare programme would come into contact with the public. The needs and requirements of beneficiary clients would be found out and the marketing-mix would be formulated at this point. Any clinical service that is required by the client would be arranged through a system of operating contracts which the peripheral unit could have with government and private hospitals, clinics, etc. as stated earlier. This would stimulate competition among these agencies and, consequently, help to improve the quality of services offered to the beneficiaries. In the proposed approach, incentives in cash and kind would be discontinued and these would be supplemented by good quality services, health insurance and mediclaim facilities for post-operative treatment and so on, if required.

At the peripheral level, the ANM would play an important role both as a motivator and as a provider of basic MCH-Family Planning services like immunisation, IUD insertion, etc. The ANM would be required to visit each village within her jurisdiction twice a month on fixed dates and at a fixed time. This would help the local people to avail of her services with ease, Since it would not be possible for an ANM to cater to all the villages within her jurisdiction (5,000 population) at the same time, it is suggested that the post of a Community Family Welfare Guide (CFWG) be created in every village.

The CFWG could be a person practising some form of family planning, and would act as a link person between the ANM and the villagers and also help to motivate the villagers to adopt family planning methods. The CFWGs could also act as depot holders for contraceptives like the oral pill and condom for which they would be paid a commission. This would make the CFWG's position viable and strengthen the community based distribution system. The performance of the CFWGs would be evaluated regularly and if found unsatisfactory, another person would be appointed.

A client opting for sterilisation would be referred by the CFWG to an ANM, who would, in turn refer the case to a Family Welfare Promoter. The Family Welfare Promoter would be responsible for making the necessary arrangements for the procedure in either a public or a private hospital or clinic, including the existing CHC, PHC, etc. Similarly, in case of complications, the beneficiary could approach a CFWG who would inform the Family Welfare Promoter or ANM and the latter would be responsible for arranging medical help within a stipulated time. This would help create confidence among the people and they would feel assured that they would be taken care of if a complication were to occur. This, in turn, would help increase the acceptance of the family welfare programme and hence convert the latent need for family welfare services (which is quite high) into felt need, thereby increasing the demand for family planning services.

To facilitate the work of the ANM, it is suggested that the current eligible couple approach be replaced by the birth-based approach as this would greatly facilitate the ANMs to locate and approach clients. In the former approach, the ANM would have to cater to 900 eligible couples (if 18 per cent of the total population is assumed to be eligible) and, in the latter, to only 175 mothers (if the birth rate is assumed to be 35). This would help to reduce the ANM's work-load and improve the quality of services provided. It however, does not mean that other couples would not be able to avail of her services, it simply means that the concentration would be on pregnant women and mothers of one year-old children.

Operational issues

The suggested model proposes to utilise the existing manpower working in the family welfare programme as far as possible. If suitable persons are not available, they would be transferred from other departments on deputation or recruited for the programme.

The DFWB would be headed by a Director who would be carefully selected by a selection committee constituted by the State Family Welfare Bureau and given a stable tenure of at least five years. It is, however, not necessary that the Director should be a person with a medical background. An expert in the field of management which would include expertise in marketing, motivation and monitoring could be appointed. The Director would be assisted by three Deputy Directors having expertise in the areas of supply, demand generation and project management including evaluation and monitoring.

The impact of the proposed model would be evaluated on the basis of outcome indicators such as the crude birth rate and not by output indicators like the couple protection rate. For this, a baseline survey would have to be conducted to chalk out a profile of the districts. A demographic profile of likely achievements in terms of the crude birth rate, infant mortality rate, total fertility rate, and maternal mortality rate would also be stated.

The implementation of the programme according to the proposed approach would not require additional financial inputs. Hence, the amount for implementing the proposed approach would not exceed the specified budget currently spent for family welfare purposes in a given district. However, in the initial stage, some extra expenditure might have to be incurred.

Expectation from the Government

The successful implementation of the proposed district level model requires some policy decisions on the part of the Government. These include:

1. The District Family Welfare Bureau would be the sole agency to carry out the family welfare programme in the district. It would have its own budget.
2. The District Family Welfare Bureau would be declared as an autonomous body (that is, it would be given the freedom to carry out the programme based on guidelines set by itself within the format of the new model). The districts would hence be exempted from targets and other requirements imposed from the top. The Bureau would, however, be required to make five yearly demogra-

phic plans for the district and their activities would be guided by this plan.

The job responsibilities of some workers would have to be redefined, especially those of the paramedical staff who would be working under the DFWB. For example, the responsibilities of the ANM would be confined to basic MCH and family planning services only, as noted above. The budget sanctioned for the family welfare programme in a particular district would be given to the respective Bureaux.

There are certain clinical units like the Rural Family Welfare Centres, post-partum centres, etc. which are financed by the family planning budget. These would remain with the medical department but would continue to be financed by the existing family welfare budget. However, the job responsibilities of personnel working in these units would be redefined.

onclusion

The present population scenario in the ountry is grim. Nevertheless, population ontrol is by no means an impossible task. lany other countries with worse emographic profiles, who started their amily planning programmes much after India had, have achieved considerable success in controlling their population, through determination, by undertaking imaginative programmes, and by involving the people.

If the threatening growth rate of population is considered a serious problem by the Government of India then it should be tackled in a systematic manner. This calls for structural changes in the family welfare programme so that it can be effectively implemented and easily accepted by the masses. All that is required is a firm and bold decision on the part of the government and a strong political will to implement the proposed model. Perestroika has indeed become a part of our daily life. This word ensures the survival of the fittest and the fittest are those who readily adapt to changing situations. It would be worthwhile to bring about holistic changes in the family welfare programme based on the guidelines discussed above.

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News and Notes

Sex education crucial for Kenyan youth

At no time has sexuality education been as desperately needed as the present, reports an article in the Kenyan *Standard* newspaper. Responding to criticism of sex education programmes, the article says that sex education "aims at instilling moral values in the young people so that they are not caught in the whirlwind of immorality and promiscuity".

The paper reports that adolescent pregnancy and abortion are rising to alarming proportions, and that more than 50 per cent of casualty cases in one national hospital are the result of unfinished, unsafe abortions. There are reports of children as young as 10 years old becoming pregnant without knowing how, and the paper argues that, as traditional family structures break down, sex education is required to respond to the crisis facing young Kenyans today. (*The Standard, Kenya,* 28 August 1993).

Adolescent pregnancy down in the UK

The number of adolescent pregnancies in the UK has fallen for the first time in 10 years. According to government reports, the threat of AIDS and more 'user-friendly' family planning clinics account for this reversal of a trend that started in 1980. In 1980 there were 7.2 pregnancies per 1,000 girls aged 13 to 15 years. Every year the rate increased, peaking at 10.1 in 1990. In 1991, the rate dropped to 9.3.

Alison Hadley of Brook Advisory Centres says "there are still areas where teenagers can have difficulty getting family planning but on the whole health authorities have been addressing the problem and the benefits are showing." Brook has expanded by 50 per cent in the last year. (*The Daily Telegraph,* UK, 17 September 1993).

Can Asia support its population?

Rafeeuddin Ahmed, United Nations Undersecretary General and Executive Secretary of the UN's Economic and Social Commission for Asia and the Pacific (ESCAP), says there is a clear imbalance between land and population in Asia. Asia covers 23 per cent of the world's land area, and contains approximately 56 per cent of the world's population. The regional population of 2.8 billion is expected to increase to 3.5 billion by the end of the decade and to 4.15 billion by the year 2025. Use of intensive cultivation techniques has expanded food supply, but at the expense of land quality. The deterioration of cultivable land into desert is growing in Asia and now affects more than 860 million hectares and 150 million people. Despite economic gains in some countries, the total number of the absolute poor is about 800 million, and urbanization is on the increase. (*International Herald Tribune*, France, 13 September 1993)

Men's influence on spouses' contraception

High fertility levels in sub-Saharan Africa continue unchanged despite the efforts of national governments, policy-makers, and international organizations.

According to Alex Chika Ezeth, the failure of these efforts may be caused by family planning programmes that are not addressed to the true family planning decision-maker, the husband. Investigating the roles of husbands and wives in family planning decision-making in Ghana, Ezeh found that although women are increasingly assuming what has been considered the man's role in a relationship by providing economically for themselves and their children, husbands still make family planning decisions.

Ezeh argues that while men's family planning attitudes affect their wives' attitudes, the marriage patterns and cultural norms in Ghana (and probably in much of sub-Saharan Africa) prevent women's contraceptive attitudes from influencing their husbands' attitudes. However, most family planning programmes are geared exclusively towards women. He argues that changing the focus of family planning programmes to include men and women would increase the effectiveness of these programmes. (*Population Council Press Release*, July 1993, reviewing *Studies in Family Planning*, Vol 24, No 3, May/June 1993).

And in Mexico, the 'machismo factor' has a strong influence on women's reproductive behaviour and contraceptive use, according to Population Concern volunteer Louise Hulton.

At the clinics, between five and 10 per cent of women weve attending without their husband's knowledge, and internal methods, such as the IUD or injection were being chosen so that husbands would not find out. In rural areas, women were not returning for necessary check-ups for fear of being found out by their husbands. Women's greatest fear, aside from physical violence, was that husbands would leave them if they discovered that they had been using family planning services. In addition, "to be seen as a woman alone is shameful, so the importance of having a man, no matter how he treats you, is enormous," according to one social worker in Yucatan.

Dr Carlos Hernandez Manujan runs MEXFAM's only clinic for men. He told Hulton that children guarantee manhood in Mexico. "If they have few children they are poco hombre. Unfortunately women help to reinforce this macho image and they also feel that by having more children they are being better wives." *(Population Concern News, No. 8, 1993).*

Pregnancy and child health in Mali and Burkina Faso

African adolescents have the highest fertility rates in the world, but children born to mothers under the age of 18 years are almost twice as likely to die before they reach the age of five as are children born to mothers between 20 and 34 years of age.

While there are clear biological explanations for why infnats born to young mothers have poorer health, a report in *Studies in Family Planning* found that the behaviour of young mothers (under the age of 19) mothers has the greatest impact on their children's health. Using data from more than 20,000 live births in Bamako Mali and Bobo-Dioulasso, Burkina Faso, the authors found that adolescent pregnancies were associated with lower birth weights, worse prenatal behaviour and health care, and higher infant mortality. They conclude that policy-makers should be aware of the causes for the link between adolescent motherhood and poor child health so that they can design adequate programmes to address these issues. Based on report findings, the authors recommend that family planning information, education, and information programmes focus on postpoing adolescent pregnancy to improve child health and survival. (*Population Council Press Release,* July 1993, reviewing *Studies in Family Planning, Vol. 24, No 3,* May/June 1993)

Review of contraceptive methods in Indonesia

Norplant was found to be a safe, effective and acceptable method of contraception in Indonesia, in a review of contraceptive method use published in the *British Journal of Family Planning.*

In Indonesia, IUDs are the most popular method, although they also elicit the greatest number of reported side-effects. The commonest problem, as with combined oral contraceptive users, was pregnancy. Progestagen-only injectables frequently caused amenorrhoea, and were not very popular anywhere in the country.

In contrast to these well established methods, Norplant clients had few side effect complaints, and only discontinued if they wished to conceive. The author suggests that as contraception was most often used at family completion, Norplant might be an acceptable alternative to sterilization, which is sometimes viewed as violating Islamic law. Another striking finding was that all client spouses favoured the use of contraception, and many attended clinis with their wives. (Thompson, J.L. 'Indonesia: an assessment of new and conventional methods of contraception', *British Journal of Family Planning.* Vol 19, pp 195-97, July 1993).

Japanese attitudes to contraception and abortion

Contraceptive use has increased in proportion to a decrease in abortion in Japan, according to a survey conducted in 1992 by the Population Problems Research Council of Mainichi Newspapers.

The number of abortions has declined since a peak 1.17 million in 1955. In 1991 there were 0.45 million abortions. Up to 80 per cent of respondents approved of abortion either on certain conditions or unconditionally. The most popular family planning method remains the condom (75.3 per cent of users), and oral contraceptives still remain unpopular, mainly due to concern about side effects, despite recent attempts to legalize them in Japan.

The ideal family size of respondents was three children, although the total fertility rate dropped to 1.53 children per woman in 1991. The majority agreed that the government should not take measures to raise fertility rates because it is an individual's choice whether to have a child or not.

The survey also elicited opinion on wives working outside the home, caring for elderly relatives, various family planning methods, family size, Japan's population growth rate, sexual harassment, and AIDS. This 21st Survey was conducted in co-operation with the Family Planning Federation of Japan, IPPF's member affiliate, the Japan Family Planning Association, and the Japanese Organization for International Co-operation in Family Planning. (*Integration,* No. 36, June 1993).

The Journal of Family Welfare

INSTRUCTIONS TO AUTHORS

THE JOURNAL OF FAMILY WELFARE publishes papers, views and book reviews on all aspects of family planning and population including the behavioural sciences, demography, the bio-medical sciences, marriage and family living including population education, family life education, sex education and human ecology.

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FAMILY PLANNING ASSOCIATION OF INDIA

(Registered Under the Societies' Registration Act, 1860)

AIMS AND OBJECTS

To desseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between population, resources and the environment, and the attainment of a higher standard and quality of life.

·To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature.

To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.

To undertake or promote studies and activities in regard to services, training, education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception,sterility and sub-fertility, sex and family life education, marriage counselling, population education and human ecology.

To collect information and statistics and to organise conferences, seminars, training courses and other meetings, whether local, national or international, in the furtherance of the Aims and Objects of the Association.

To establish Branches and other units for the promotion of the Aims and Obejcts herein.

To foster and develop contacts with other organisations engaged in similar types of work in India and abroad.

Clauses 8 to 18 deal with administrative and financial subjects.

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